

# **hp Integrity cx2600 Installation Guide**

**Regulatory Model Number: RSVLA-0303-DC**

**Version 3.0**



**Manufacturing Part Number: AB216-90001**

**March 2004**

U.S.A.

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The CD will autorun when you insert it into a Windows® workstation, or, point your browser at the index.htm file located under the **Start** directory of the CD. All users, including UNIX®/Linux, can access a complete manual set by viewing the directory **manuals**. The manuals are in Adobe® Acrobat® Reader (pdf) format.

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# 1 About This Document

This document describes how to install your hp Integrity cx2600 Server, Regulatory Model Number: RSVLA-0303-DC.

The document printing date and part number indicate the document's current edition. The printing date will change when a new edition is printed. Minor changes may be made at reprint without changing the printing date. The document part number will change when extensive changes are made.

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## What's in This Document

The hp Integrity cx2600 Server Installation Guide contains these chapters:

- **Chapter 2, “Server Overview and Unpacking.”** Use this chapter to learn how to unpack and setup your hp Integrity cx2600 Server.
- **Chapter 3, “Installing Additional Components.”** Use this chapter to learn how to install additional components.
- **Chapter 4, “Troubleshooting.”** Use this chapter to learn how to perform minimal troubleshooting of your system.
- **Chapter 5, “Cable Connections.”** Use this chapter to learn about core I/O ports, SCSI ports, and management processor LAN ports.

## Typographical Conventions

This document uses the following conventions.

<i>Title</i>	The title of a document or a CD.
<b>KeyCap</b>	The name of a keyboard key. Note that <b>Return</b> and <b>Enter</b> both refer to the same key.
<i>Emphasis</i>	Text that is emphasized.
<b>Bold</b>	Text that is strongly emphasized, such as the summary text in bulleted paragraphs.
ComputerOutput	Text displayed by the computer.
<b>UserInput</b>	Commands and other text that you type.
Command	A command name or qualified command phrase.

## Related Documents

The *HP Server Documentation CD-ROM* has been provided with your server. It contains a complete documentation set for the server, including localized versions of key documents. Included on the CD-ROM are the *Site Preparation* and *Operations and Maintenance* guides, which contain in-depth troubleshooting, installation, and repair information.

The CD will autorun when you insert it into a Windows workstation, or, point your browser at the `index.htm` file located under the **Start** directory of the CD. All users, including UNIX/Linux, can access a complete manual set by viewing the directory **manuals**. The manuals are in Adobe Acrobat Reader (pdf) format.

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For the latest information on HP-UX patches, check the HP IT Resource Center at <http://itrc.hp.com>.

## Information to Collect Before You Contact Support

Before you contact HP support, you should:

**Step 1.** Check information on troubleshooting and attempt to solve the problem. See Chapter 4, “Troubleshooting.”

- Note failure symptoms and error indications (LEDs and messages) by checking the SEL and FPL logs.
- Try to determine precisely what did or did not happen.

**Step 2.** Collect the following information:

- The model number of your server (for example, cx2600).



- The product number of your server. This can be found on the identification label, which is found at the front of the unit (typically A6837B A6838B, and so on).
- The serial number of your server. This can be found on the identification label.

**Step 3.** Become familiar with your system configuration:

- Are you using the LAN, RS232, or web interface to monitor the server?
- How many processors, DIMMs, and PCI cards have been installed?
- What versions of processor, memory, and PCI cards are used and where are they installed?
- What accessories are installed?

**Step 4.** Determine the following:

- Which firmware versions are in use?
- When did the problem start?
- Have recent changes been made to the system?
- Which operating system and version is in use?



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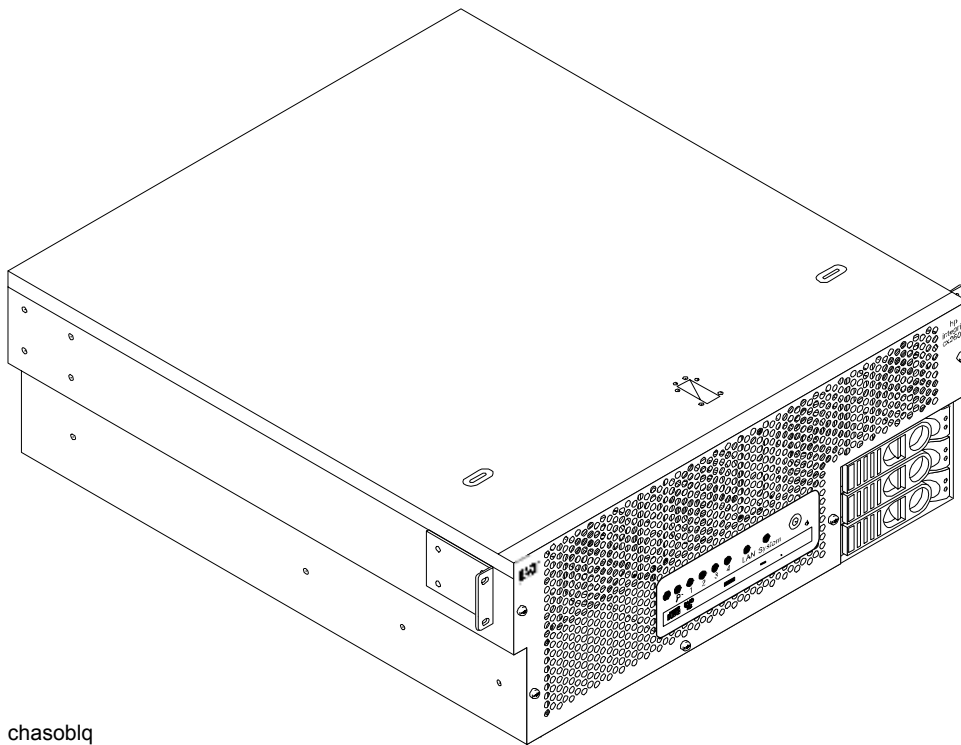
## 2 Server Overview and Unpacking

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### Server Overview

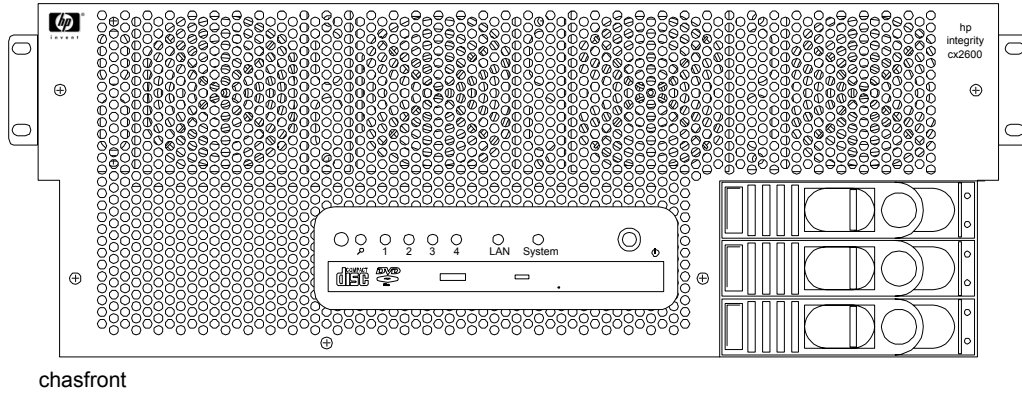
The hp Integrity cx2600 Server (Regulatory Model No. RSVLA-0303-DC) is a 1- or 2-way, IA-64, carrier grade server based on the Itanium processor family architecture. This server is NEBS level-3 compliant and is intended for Telco users. The hp Integrity cx2600 Server accommodates 1 or 2 processors, from 4 to 12 DIMMs (providing 1 to 24 GB of memory), and internal peripherals including up to 3 disks and a CD/DVD-ROM. Its high availability features include hot-swap fans and power supplies, and hot-plug disk drives. The hp Integrity cx2600 Server uses the Debian CG 5.0+ operating system (Linux).

**Figure 2-1**      **hp Integrity cx2600 Server**

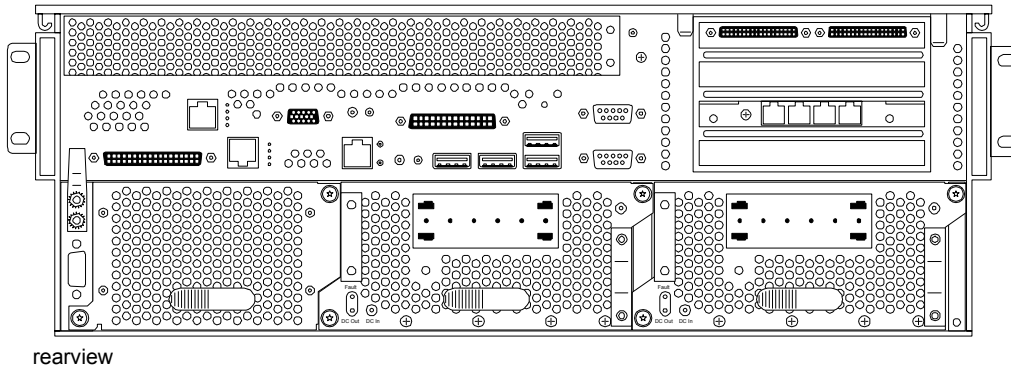


chasoblq

**Figure 2-2 hp Integrity cx2600 Server (front view)**



**Figure 2-3 hp Integrity cx2600 Server (rear view)**



## Unpacking the Server

Hewlett-Packard shipping containers protect their contents under normal shipping conditions. After the equipment arrives, carefully inspect each carton for signs of shipping damage. If damage is found, document the damage with photographs and contact the transport carrier immediately.

If the equipment has any damage, a damage claim form must be obtained from the shipping representative. The customer should complete the form and return it to the shipping representative.

## Unpacking the Server

---

**WARNING** Because a filled hp Integrity cx2600 shipping container may weigh as much as 95 pounds (43 kilograms), two people should lift the container together. Do not lift or carry the HP Server alone. The unit should be transported on a cushioned, wheeled cart or carrier. Failure to heed this warning could result in serious personnel injury.

---

## Removing the HP Server from the Shipping Container

---

**WARNING** The hp Integrity cx2600 Server may weigh as much as 95 pounds (43 kilograms). Two people are required to lift the unit and remove packing material. Failure to heed this warning could result in serious personal injury or damage to the HP Server.

---

The hp Integrity cx2600 Server is shipped in a standard container, but is cushioned against shock. Open the top of container and lift the HP Server and packing material from the box. Place the unit on a level work surface and remove the packing material.

## Installing the HP Server into a Rack

### HP Rack

Any hp Integrity cx2600 Server that is to be installed into a rack is shipped with a mounting kit or equipment slides. With every mounting kit and slides comes an installation guide. Follow the steps in this installation guide to determine where and how to place the server into the rack.

### Non-HP Rack

There is a guide for evaluating the installation of HP equipment in non-HP racks. This document should be utilized when there is a need to evaluate and qualify whether any HP equipment can be installed, maintained, and serviced in a non-HP rack. The guide is located on the Web at: <http://www.hp.com/racksolutions>.

Once there, select “mounting information” from the menu on the left side, then select the guide titled *Mounting in Non-HP Racks*.



---

# 3 Installing Additional Components

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## Safety Information

This chapter describes installing additional or optional hardware to your hp Integrity cx2600 Server.

Follow the procedures listed below to ensure safe handling of components and to prevent harm to both you and the HP Server:

- Use an antistatic wrist strap and a grounding mat, such as those included in the Electrically Conductive Field Service Grounding Kit (HP 9300-1609).
- Handle accessory boards and components by the edges only. Do not touch any metal-edge connectors or any electrical components on accessory boards.
- Do not wear clothing that is subject to static charge build-up, such as wool or synthetic materials.

---

**WARNING**    **Hazardous energy is present inside the HP Server. Always remove power from the server before working inside the unit. Serious injury may result if this warning is not observed.**

---

---

## Service Tools Required

Service of this product may require one or more of the following tools:

- Electrically Conductive Field Service Kit (P/N 9300-1609)
- 1/4 inch flat blade screwdriver
- ACX-15 torx screwdriver
- ACX-10 torx screwdriver
- IPF CPU install tool (P/N 5069-4551—supplied with processors shipped separately)

---

## Accessing a Rack Mounted Server

The hp Integrity cx2600 Server is designed to be rack mounted. The following procedure explains how to gain access to an hp Integrity cx2600 Server that is mounted in an approved rack.

---

**WARNING**    **Ensure that all anti-tip features (front and rear anti-tip feet installed; adequate ballast properly placed, and so on) are employed prior to extending the server.**

---

## Installing Components When the Server is in a Rack

Power supplies, disks and fans can be installed when the server is fully inserted into a rack. Only front and rear access is required.

Internal components can be accessed by removing the top cover. Proceed as follows:

---

**WARNING**    **Hazardous energy is present inside the HP Server. Always remove power from the server before working inside the unit. Serious injury may result if this warning is not observed.**

---

---

**NOTE**        Ensure that there is enough area (approximately 1.5 meters [5 ft.]) to fully extend the server out the front of the rack and work on it.

---

- Step 1.** Turn off and disconnect system power. Disconnect power at the DC source end of the power cable(s), using the disconnect device that is part of the rack or facility power system.
- Step 2.** Label and disconnect all cables from the unit rear panel connectors.
- Step 3.** Remove or loosen (as appropriate) the screws that fasten the server to the rack.
- Step 4.** If the server is slide-mounted, slowly pull the chassis forward (or push from the rear) to extend the chassis from the rack. The server is fully extended when the rail clips are locked in place. If the server is tray-mounted, it is not held in the rack and can fall from its mounting. Do not extend the server from the rack but remove it from the rack for internal access.
- Step 5.** Remove the top cover. Refer to “Removing the Top Cover” on page 25.

## Remove the Server from a Rack

---

**WARNING**    **Do not attempt to lift the server alone. The server may weigh as much as 32 kilograms (70 lbs). Serious injury may result if this warning is not observed.**

---

---

**NOTE**        Ensure that there is enough area (approximately 1.5 meters [5 ft.]) to fully extend the server out the front of the rack and work on it.

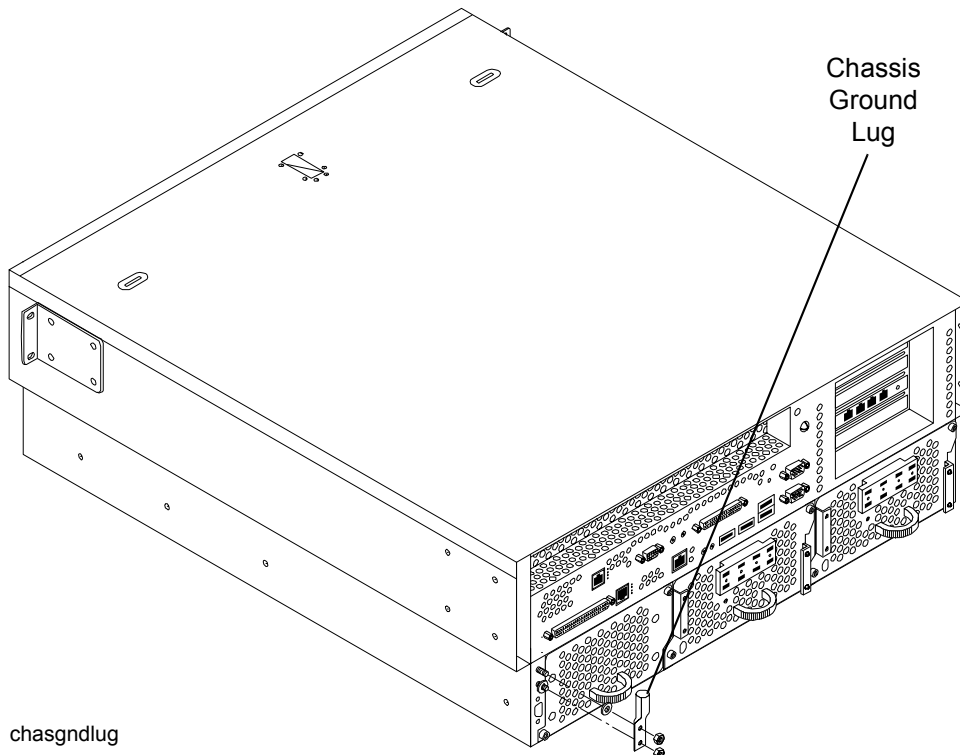
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To remove the server from the rack, perform the following steps:

- Step 1.** Turn off and disconnect system power. Disconnect power at the DC source end of the power cable(s), using the disconnect device that is part of the rack or facility power system.
- Step 2.** Label and disconnect all cables from the unit rear panel connectors.
- Step 3.** Remove or loosen (as appropriate) the screws that fasten the server to the rack.
- Step 4.** Label and disconnect the rack/facility ground cable from the chassis rear panel. (See Figure 3-1.)



**Figure 3-1**Chassis Ground Lug



---

**WARNING** Do not attempt to lift the server alone. The server may weight as much as 32 kilograms (70 lbs). Serious injury may result if this warning is not observed.

---

**Step 5.** If the server is slide-mounted, slowly pull the chassis forward (or push from the rear) to extend the chassis from the rack. The server is fully extended when the rail clips are locked in place. Do not extend tray-mounted servers. Tray-mounted servers are not locked in place and can fall if extended from rack.

**Step 6.** Disengage the slides or mounting hardware and take the server to a static-free work station.

## Install the Server into a Rack

To insert the server into the rack, perform the following steps:

---

**WARNING** Do not attempt to lift the server alone. The server may weigh as much as 32 kilograms (70 lbs). Serious injury may result if this warning is not observed.

---

**Step 1.** Engage the server slides or mounting kit, as appropriate.

**Step 2.** Slide the server inward and push the server into the rack until it is in position.

**Step 3.** Connect server cables to rear-panel connectors.

**Step 4.** Connect rack/facility ground cable to chassis ground lug. (See Figure 3-1.)

**Step 5.** Replace or tighten (as appropriate) the screws that fasten the server to the rack.

---

## Installing Disk Drives

The supported configuration of an hp Integrity cx2600 Server includes 1, 2 or 3 Low-Voltage-Differential (LVD), hot-plug disk drives. If any of the three disk drives are not installed a disk filler must be installed in the disk location.

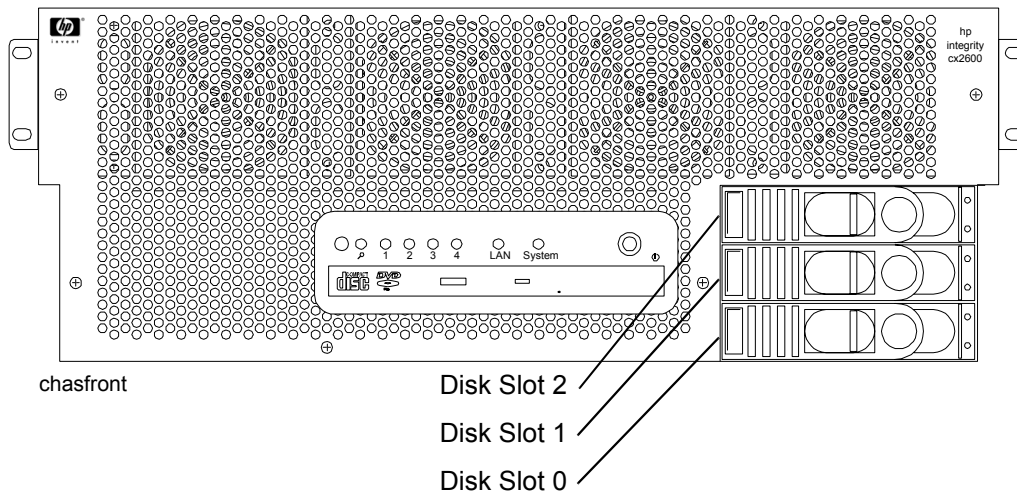
Hot-plug disk drives are located at the front of the server. The following sections describe removing and reinstalling a disk drive.

---

**CAUTION** A hot-plug device may require interaction with the operating system before the device can be safely removed from or installed into the server. Determine if the operating system supports replacement of disk drives while the operating system is running. If the operating system does not support this feature, shut down the operating system before performing these procedures. Failure to observe this caution could result in system failure.

---

**Figure 3-2** Front View of the hp Integrity cx2600 Server



## Removing Hot-Plug Disk Drives

Slots are provided for up to three hot-plug disk drives in your hp Integrity cx2600 Server. When disk drives are not installed, filler assemblies are installed to prevent air leakage and ensure adequate cooling.

---

**NOTE** The filler assemblies are removed and installed in the same manner as described for hard drives. Simply pull the dummy release lever to pull the filler from the server.

When inserting a filler, simply push the filler into position.

---

To remove a hot-plug disk drive, perform the following steps:

---

**CAUTION** The disk drives in the hp Integrity cx2600 Server are not hot-swappable. They are merely hot-pluggable. A manual software procedure may be required in order to safely remove or insert disk drives while the system is running. To avoid damage to the hard drives:

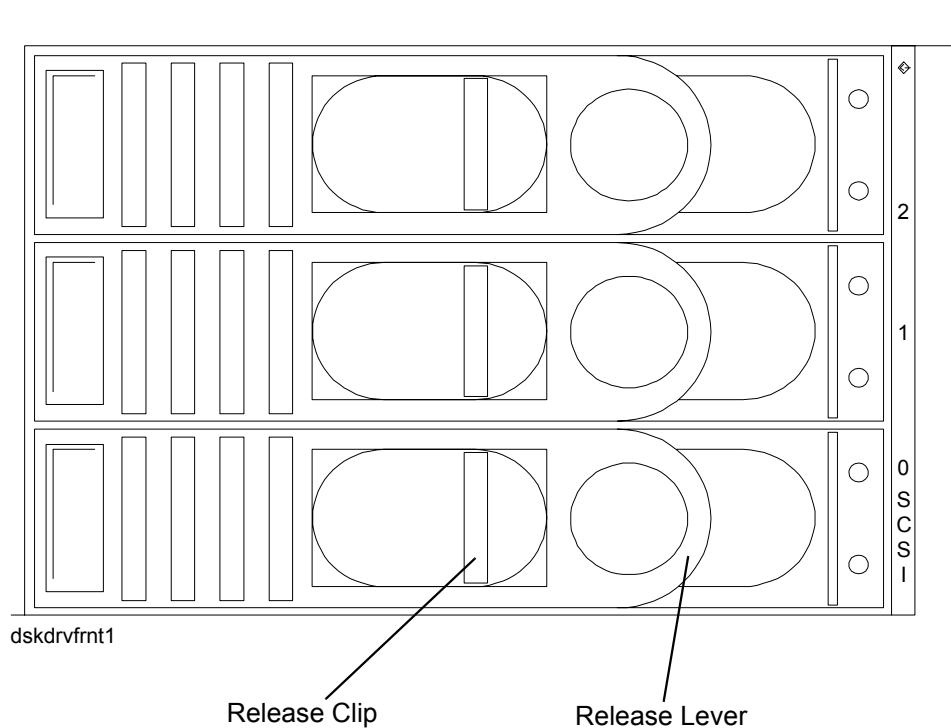
Refer to the documentation provided with the disk drive for additional information about removing and inserting a drive.

Refer to the operating system documentation for additional information about removing and inserting hot-plug assemblies.

---

- Step 1.** If required (OS does not support hot-plugging devices), stop the operating system.
- Step 2.** Squeeze inward on the colored release clip and pull the release lever to pull the drive from the server chassis.

**Figure 3-3** Disk Drives in Server



### Installing Hot-Plug Disk Drives

Up to three hot-plug disk drives may be installed in your hp Integrity cx2600 Server. Always use low profile disk drives (1.0" height) in your server.

To install a hot-plug disk drive, perform the following steps:

- Step 1.** If required (OS does not support hot-plugging devices), stop the operating system.
- Step 2.** If a disk filler is installed, remove it by pulling the release lever.
- Step 3.** With the release lever pulled out, slide a hot-plug hard disk into the disk slot until it is seated.

- Step 4.** Press the release lever until it is flush with the front of the server. You will hear it click as it locks into position.
- Step 5.** If the operating system was stopped in step 1, reset the system to the EFI Boot Maintenance Menu, to rescan the hard drives.
- Step 6.** If the operating system was stopped in step 1, use the EFI shell **map** command to verify that the newly inserted drive has been correctly installed. Refer to Chapter 5 of this guide (Cable Connections) and to the *hp Integrity cx2600 Operation and Maintenance Guide* for information about connecting a console and using the EFI shell. (The *hp Integrity cx2600 Operation and Maintenance Guide* is included on the CD provided with your system).

---

## Hot-Swap Power Supply Units

The supported configuration of an hp Integrity cx2600 Server requires that two power supplies be installed. During normal operations, the two power supplies share the load. Each provides power via a separate power rail. A single power supply can provide all power needed for normal operations, but a second power supply is installed to provide backup capability.

Hot-swap power supplies 1 and 2 are located at the rear of the chassis. The power supplies are identical and interchangeable.

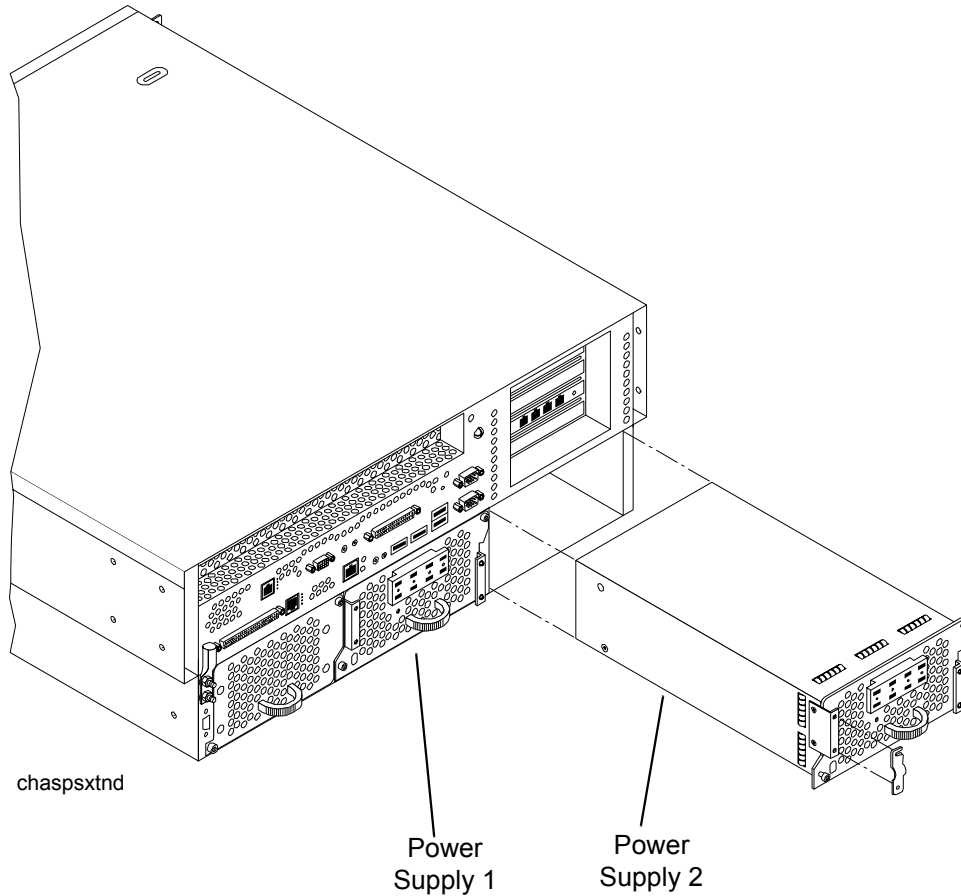
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**NOTE** A hot-swap device does not require interaction with the operating system before the device is removed from or installed into the server. If the second power supply is functioning correctly, a power supply can be powered down and removed with no effect on server operations.

The power to the server (other power supply) does not have to be off to remove or replace a hot-swap power supply.

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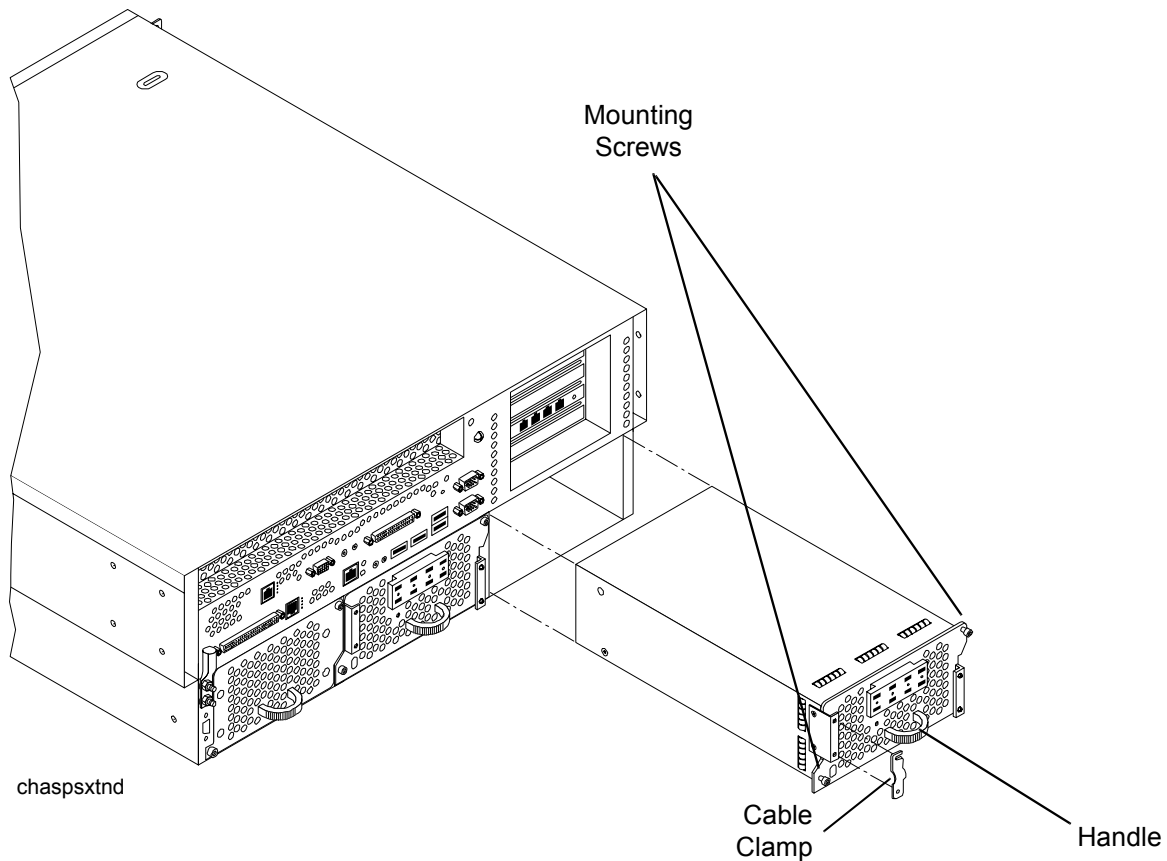
**Figure 3-4 Hot-Swap Power Supplies**



### **Removing and Replacing a Hot-Swap Power Supply**

A power supply can be replaced while the server is installed in a rack, with the server operating normally. Removal and installation of a power supply will have no effect on operations if the other power supply is functioning correctly. To remove and replace a hot-swap power supply, perform the following steps:

**Figure 3-5** Removing a Hot-Swap Power Supply



- Step 1.** If rack-mounted, it may be necessary to extend a slide-mounted server out from the rack for better access. If needed, slide the server out to the fully extended position.
- Step 2.** Remove power from the power supply being replaced. Disconnect power at the DC source end of the power cable, using the disconnect device that is part of the rack or facility power system.
- Step 3.** Loosen the two knurled knobs on the power supply cable clamp to release the power feed leads.
- Step 4.** Press up on the two lower tabs of the terminal barrier strip cover to snap off the cover.

---

**WARNING** Always check that the power cable is not connected to a power source before attempting to disconnect the power cable from power supply terminals. Failure to heed this warning could result in injury.

---

- Step 5.** Loosen or remove (as appropriate) the screws that secure power cable leads to the terminal strip and disconnect the power cable leads from the power supply.
- Step 6.** Reinstall the terminal strip hardware and the barrier strip cover (removed in steps 4 and 5) to prevent loss. Hang the cover on the upper tabs and snap the cover into place.
- Step 7.** Using an ACX-15 torx screwdriver, loosen the two captive mounting screws that secure the power supply to the server chassis.

- Step 8.** Pull the power supply from the server chassis by pulling the curved handle.
- Step 9.** Orient the replacement power supply such that the securing screws are aligned with the corresponding holes in the server chassis. Gently push the power supply into position.
- Step 10.** When the power supply is fully inserted into the server chassis, tighten the two mounting screws to secure the power supply in place.
- Step 11.** Press up on the two lower tabs on the terminal barrier strip cover to snap off the cover.

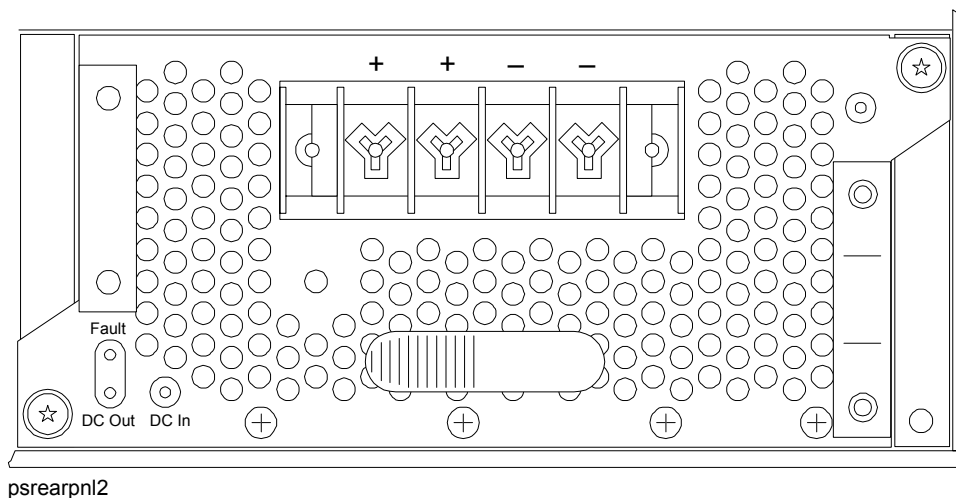
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**WARNING** Always check that the power cable is not connected to a power source before attempting to connect the power cable to power supply terminals. Failure to heed this warning could result in injury.

---

- Step 12.** Connect the power cable leads to the power supply terminals. (Connect the leads as shown in Figure 3-6.)

**Figure 3-6 Power Supply Terminals**



- Step 13.** Reinstall the terminal barrier strip cover (removed in step 11). Hang the cover on the upper tabs and snap the cover into place.
- Step 14.** Route the power cable through the power supply cable clamp and tighten the two knurled knobs to secure the cable in place.
- Step 15.** Connect the power cable to the DC power source.

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## Front Grill and Top Cover

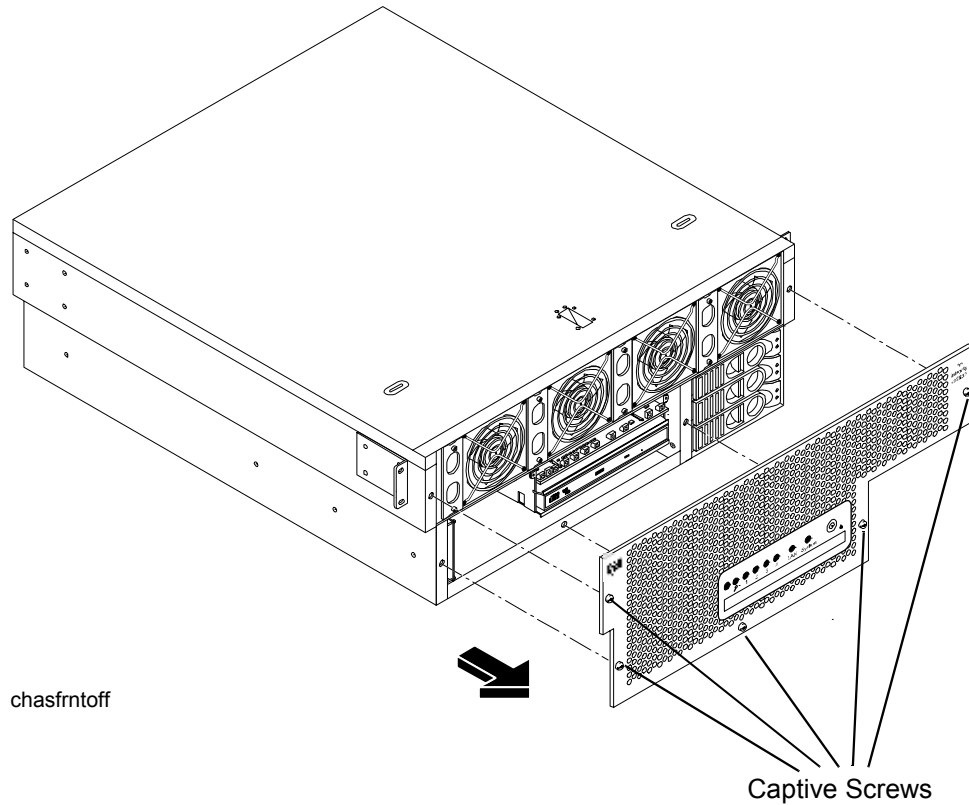
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**CAUTION** Operation of the HP Server without the front grill and top cover in place will make the server susceptible to EMI and overheating problems, which can result in system failure. Keep the front grill and top cover in place during normal operation.

Observe all ESD safety precautions while performing this procedure. Failure to follow ESD safety precautions could result in damage to the server.

---

**Figure 3-7**      **Removing the Front Grill**



## Removing the Front Grill

You must remove the front grill for access to the front mounted fans or the optical drive. To remove the front grill, perform the following steps:

- Step 1.** Using an ACX-15 torx screwdriver, loosen the five captive screws that secure the grill to the chassis.
- Step 2.** Pull the grill from the front of the server chassis.

## Replacing the Front Grill

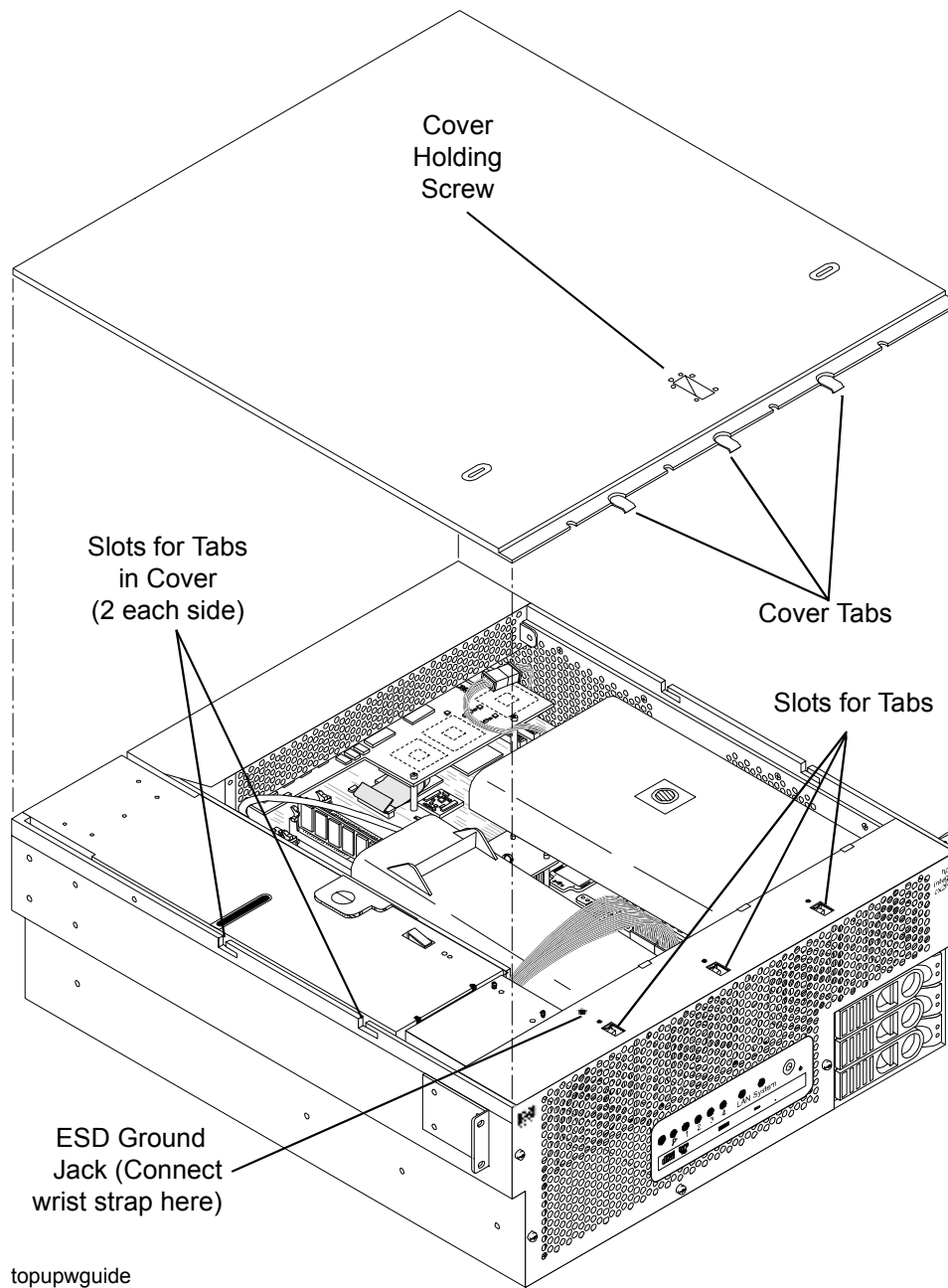
To replace the front grill, perform the following steps:

- Step 1.** Hold the grill against the front of the server chassis, in mounting position.
- Step 2.** Tighten the five captive screws to secure the grill to the server chassis.



## Removing the Top Cover

Figure 3-8 Removing the Top Cover



To remove the top cover, perform the following steps:

---

**WARNING**    **Hazardous energy is present within the server when power is applied. Do not remove the server top cover without first turning off and disconnecting power. Always replace the top cover before turning the system on.**

---

- Step 1.** Turn off and disconnect system power. Disconnect power at the DC source end of the power cable(s), using the disconnect device that is part of the rack or facility power system.
- Step 2.** Slide the server out from the rack until it stops. Refer to “Accessing a Rack Mounted Server” on page 15.
- Step 3.** If desired, remove the server from the rack at this time. Refer to “Remove the Server from a Rack” on page 16.
- Step 4.** Using an ACX-15 torx screwdriver, loosen the captive screw that holds the top cover in place.
- Step 5.** Slide the cover toward the rear of the server chassis and lift it straight up.

### **Replacing the Top Cover**

To replace the top cover, perform the following steps:

- Step 1.** Align each pair of tabs on the left and right sides of the cover with the corresponding slots in the chassis. Set the cover in place on the chassis.
- Step 2.** Align the three tabs on the front of the cover with the corresponding apertures at the top front of the chassis and insert the tabs into the slots.
- Step 3.** Push the cover forward until it seats on the chassis.
- Step 4.** Tighten the captive screw to secure the cover in place.

---

## Hot-Swap Chassis Fan Units

There are five hot-swap chassis fan units in the HP Server. Fan units 1, 2, 3 and 4 are accessible from the front of the chassis. Fan unit 5 is accessible from the rear of the chassis. Fan units 1, 2, 3 and 4 are identical and interchangeable.

If a fan failure is total (both rotors), or if the fan has been removed from the chassis for more than 30 seconds, a system will log the event as a critical error. A critical error will cause the System LED to flash red and will require a reboot to reset the error status. A total fan failure (including removal) for more than 2 minutes will result in system shutdown. If you are hot-swapping a fan assembly in response to an error message, and the system is operating normally, hot-swapping the fan in less than 30 seconds will eliminate the requirement for a system reboot. Hot-swapping a fan in less than 2 minutes will allow continued operation and prevent automatic shutdown.

---

**CAUTION** Operating the server with the front grill removed will risk EMI. Operate the server with the front grill removed only when hot-swapping a fan. Always replace the front grill immediately after replacing the fan.

Observe all ESD safety precautions while performing this procedure. Failure to follow ESD safety precautions could result in damage to the server.

---

---

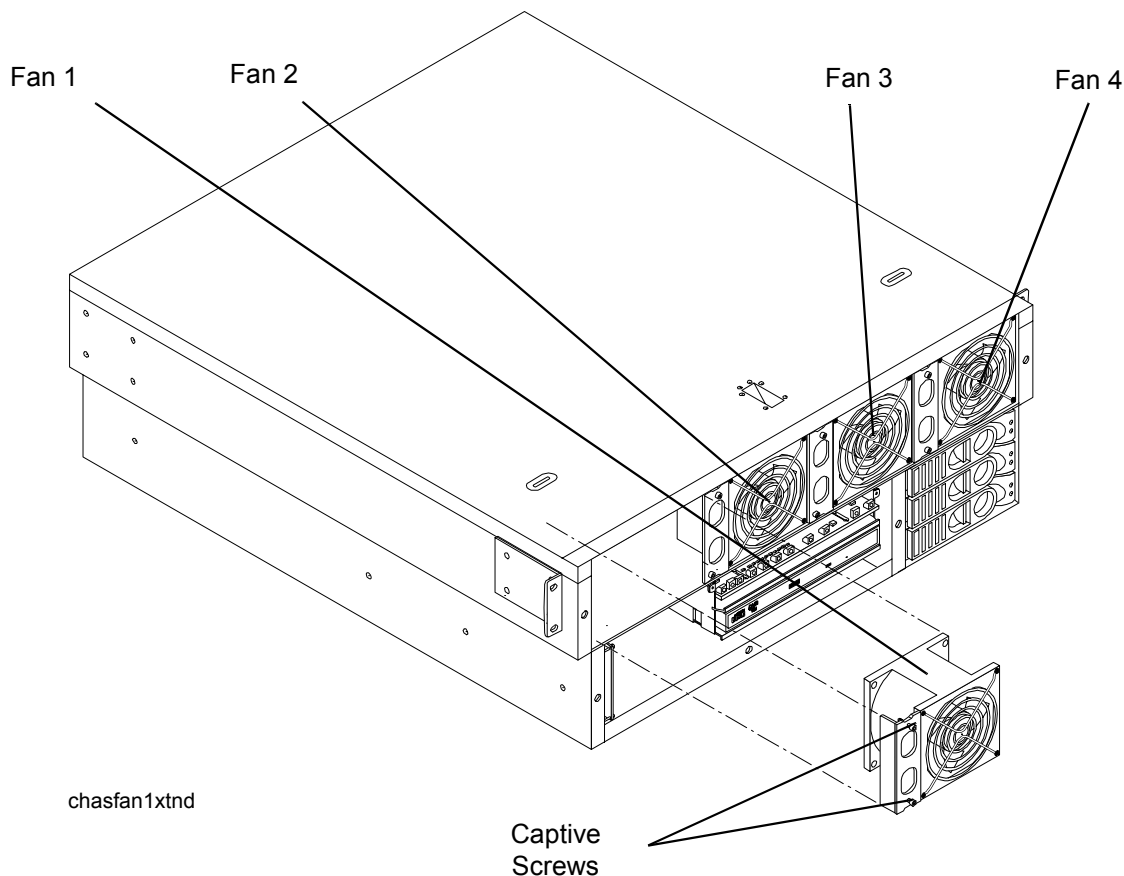
**NOTE** A hot-swap device does not require interaction with the operating system before the device is removed from or installed into the server.

The power to the server does not have to be off to remove or replace a hot-swap chassis fan unit.

---

## Removing and Replacing a Front Panel Hot-Swap Fan

**Figure 3-9** Removing a Front Panel Hot-Swap Fan



The server does not need to be removed or extended from the rack to allow fan replacement. To remove and replace a hot-swap fan from the front of the server chassis, perform the following steps:

- Step 1.** Remove the front grill. Refer to “Removing the Front Grill” on page 24.
- Step 2.** Using an ACX-15 torx screwdriver, loosen the two captive screws on the plastic fan extractor handle (left side of fan).

---

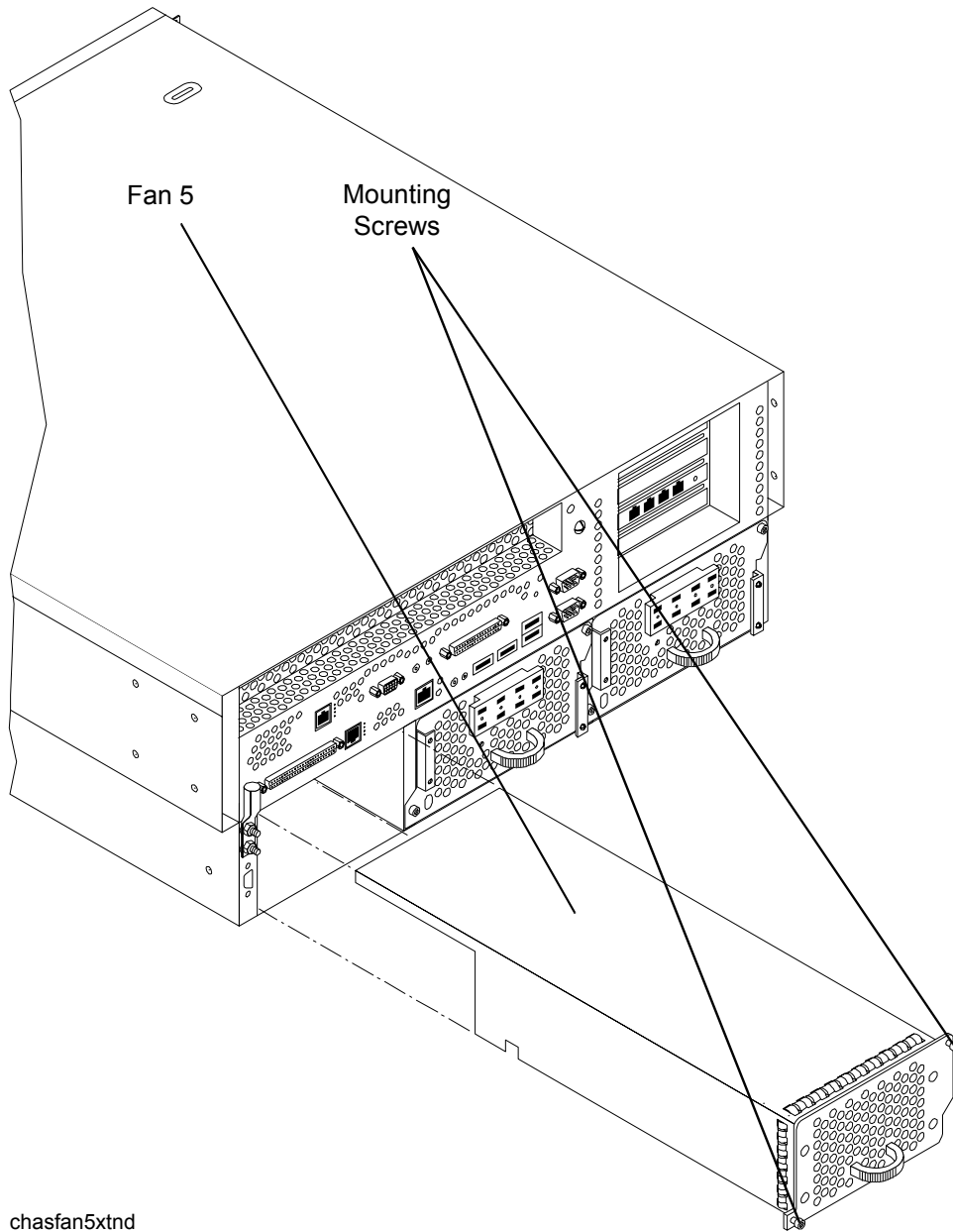
**CAUTION** Hot-swapping a fan can interrupt system operation. If you are hot-swapping a fan assembly in response to an error message, and the system is operating normally, hot-swapping the fan in less than 30 seconds will eliminate the requirement for a system reboot. Hot-swapping the fan in less than 2 minutes will allow continued operation and prevent automatic shutdown.

---

- Step 3.** Using the extractor handle, pull the fan from the server chassis.
- Step 4.** Orient the replacement fan such that the extractor handle is at the left. Insert the fan into the chassis opening and press firmly into place.
- Step 5.** Tighten the two captive screws that secure the fan in place.

## Removing and Replacing a Rear Panel Hot-Swap Fan

Figure 3-10 Removing a Rear Panel Hot-Swap Fan



To remove and replace the hot-swap fan from the rear of the server chassis, perform the following steps:

---

**NOTE** The server does not need to be removed from the rack to allow fan replacement.

---

**Step 1.** If rack-mounted, it may be necessary to extend a slide-mounted server out from the rack for better access. If needed, slide the server out to the fully extended position.

**Step 2.** Using an ACX-15 torx screwdriver, loosen the two captive screws that secure the fan unit to the server chassis.

---

**CAUTION** Hot-swapping a fan can interrupt system operation. If you are hot-swapping a fan assembly and the system is operating normally, hot-swapping the fan in less than 30 seconds will eliminate the requirement for a system reboot. Hot-swapping the fan in less than 2 minutes will allow continued operation and prevent automatic shutdown.

---

**Step 3.** Pull the fan assembly from the server chassis by pulling the curved handle.

**Step 4.** Orient the replacement fan assembly such that the curved handle is at the bottom. Gently push the fan unit into position.

**Step 5.** Tighten the two captive screws that secure the fan unit to the server chassis.

---

## PCI Card Installation

The hp Integrity cx2600 Server has four 64-bit, 133 MHz PCI-X accessory card sockets located in a removable card cage. The PCI card cage must be removed before PCI cards can be removed or installed. The following sections remove and open the card cage, remove and install PCI cards, and reinstall the card cage.

### Removing the PCI Card Cage Assembly

To remove the PCI card cage assembly, perform the following steps:

- Step 1.** If rack mounted, extend a slide-mounted server out from the rack until it stops. Refer to “Accessing a Rack Mounted Server” on page 15.
- Step 2.** Turn off the system. Disconnect all external cables.
- Step 3.** If desired, remove the server from the rack and place it on an ESD-protected work surface. Refer to “Remove the Server from a Rack” on page 16.

---

**WARNING**     **Ensure that the system is powered down and all power sources have been disconnected from the server prior to removing or replacing the PCI card cage assembly.**

**Voltages and hazardous energy can be present at various locations within the server whenever a power source is connected. This hazard is present even when the power switch is in the off position.**

**Failure to observe this warning could result in personal injury or damage to equipment.**

---

- Step 4.** Remove the top cover from the chassis. Refer to “Removing the Top Cover” on page 25.

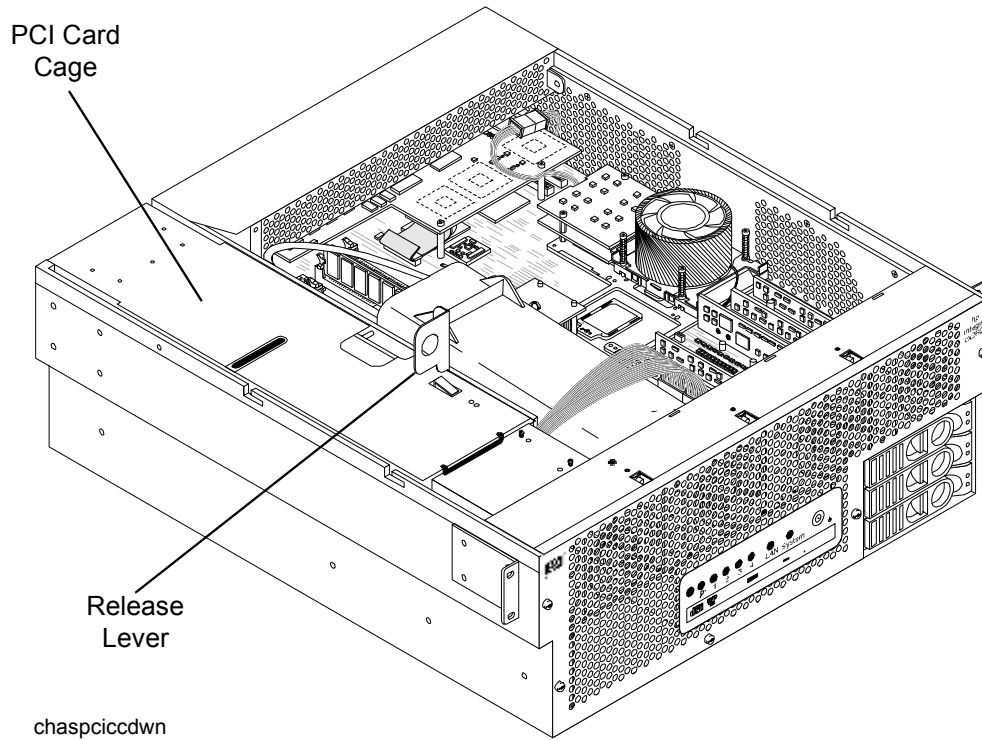
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**CAUTION**     **Observe all ESD safety precautions while performing this procedure. Failure to follow ESD safety precautions could result in damage to the server.**

---

- Step 5.** Pull up on the PCI card cage release lever (colored lever) and the back edge of the card cage, then lift the card cage out of the server chassis.

**Figure 3-11** Removing the PCI Card Cage



- Step 6.** Place the card cage on an ESD-protected work surface.
- Step 7.** Orient the card cage such that PCI card connectors (within the card cage) are at the bottom, when viewed through the open side of the card cage, and cards can be removed by lifting them from the sockets.
- Step 8.** Remove the cover that is now on top of the card cage by sliding the cover toward the rear of the card cage and lifting the cover. Remove the cover from the card cage.

---

**NOTE** The four connectors within the card cage are identical and have the same capabilities. A compatible PCI card can be installed in any slot.

---

## Removing a PCI Card

---

**NOTE** The PCI card cage must be removed from the server chassis to allow access to the PCI cards.

---

To remove a PCI card, perform the following steps:

- Step 1.** Remove the PCI card cage from the server chassis. Refer to “Removing the PCI Card Cage Assembly” on page 31.
- Step 2.** Remove the cover from the PCI card cage.



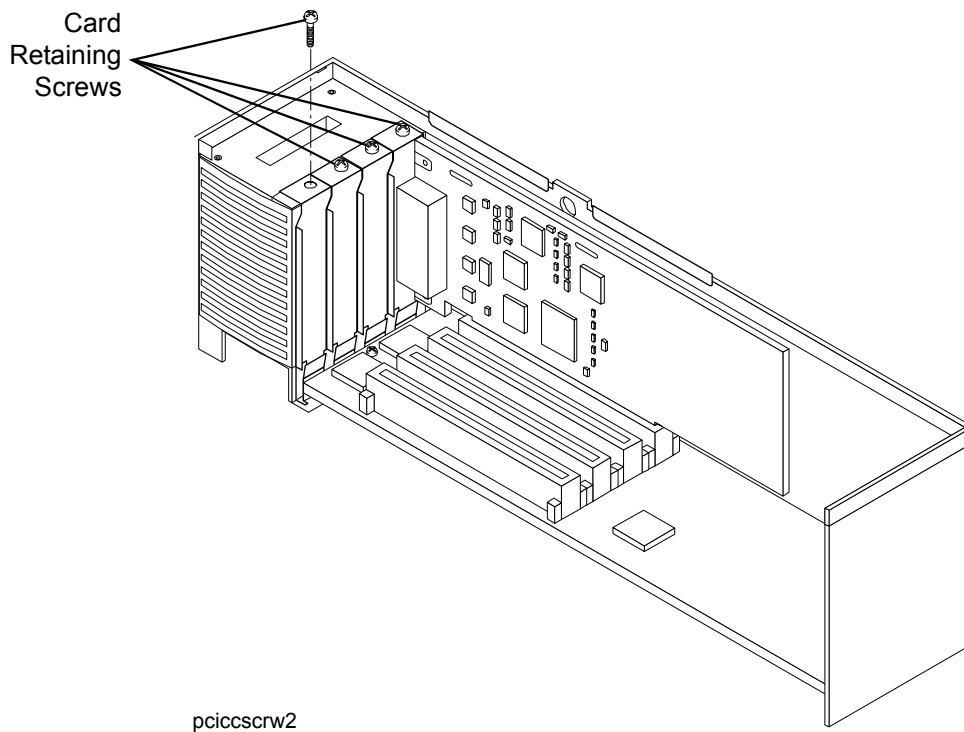
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**CAUTION** Observe all ESD safety precautions while performing this procedure. Failure to follow ESD safety precautions could result in damage to the server.

---

- Step 3.** If a cable will block card removal, or if it is connected to the card to be removed, disconnect the cable(s) from card connector(s) at this time.
- Step 4.** Using an ACX-15 torx screwdriver, remove the retaining screw that secures the card in place. See Figure 3-12.

**Figure 3-12** PCI Card Retaining Screws



- Step 5.** Grasp the card by the two opposing edges and lift the card from the socket.
- Step 6.** If no card will be installed in the empty socket, install a blank panel in the bulkhead opening at the end of the card cage. The blank panel is necessary to ensure correct air flow and EMI protection when the card cage is installed in a working server.

## Installing a PCI Card

---

**NOTE** The PCI card cage must be removed from the server chassis to allow installation of PCI cards.

---

The four connectors in the PCI card cage are identical and have the same capabilities. A compatible PCI card may be installed in any slot. To install a PCI card, perform the following steps:

- Step 1.** Remove the PCI card cage from the server chassis. Refer to "Removing the PCI Card Cage Assembly" on page 31.

**Step 2.** Remove the cover from the PCI card cage.

---

**CAUTION** Observe all ESD safety precautions while performing this procedure. Failure to follow ESD safety precautions could result in damage to the server.

---

**Step 3.** If a blank panel is installed at the end of the card cage (for the card position/socket which will be used), remove the blank panel.

**Step 4.** Grasp the card to be installed by opposing edges and orient the card such that its connector is aligned with the card cage socket and the PCI interface connector can be extended through the opening at the end of the card cage. Insert the card into the desired socket.

**Step 5.** Secure the card in the card cage using the retaining screw provided.

**Step 6.** Connect any cables (if appropriate) to card sockets at this time.

### Installing the PCI Card Cage Assembly

To install the PCI card cage assembly, perform the following steps:

---

**WARNING** Ensure that the system is powered down and all power sources have been disconnected from the server prior to removing or replacing the PCI card cage assembly.

**Voltages and hazardous energy can be present at various locations within the server whenever a power source is connected. This hazard is present even when the power switch is in the off position.**

**Failure to observe this warning could result in personal injury or damage to equipment.**

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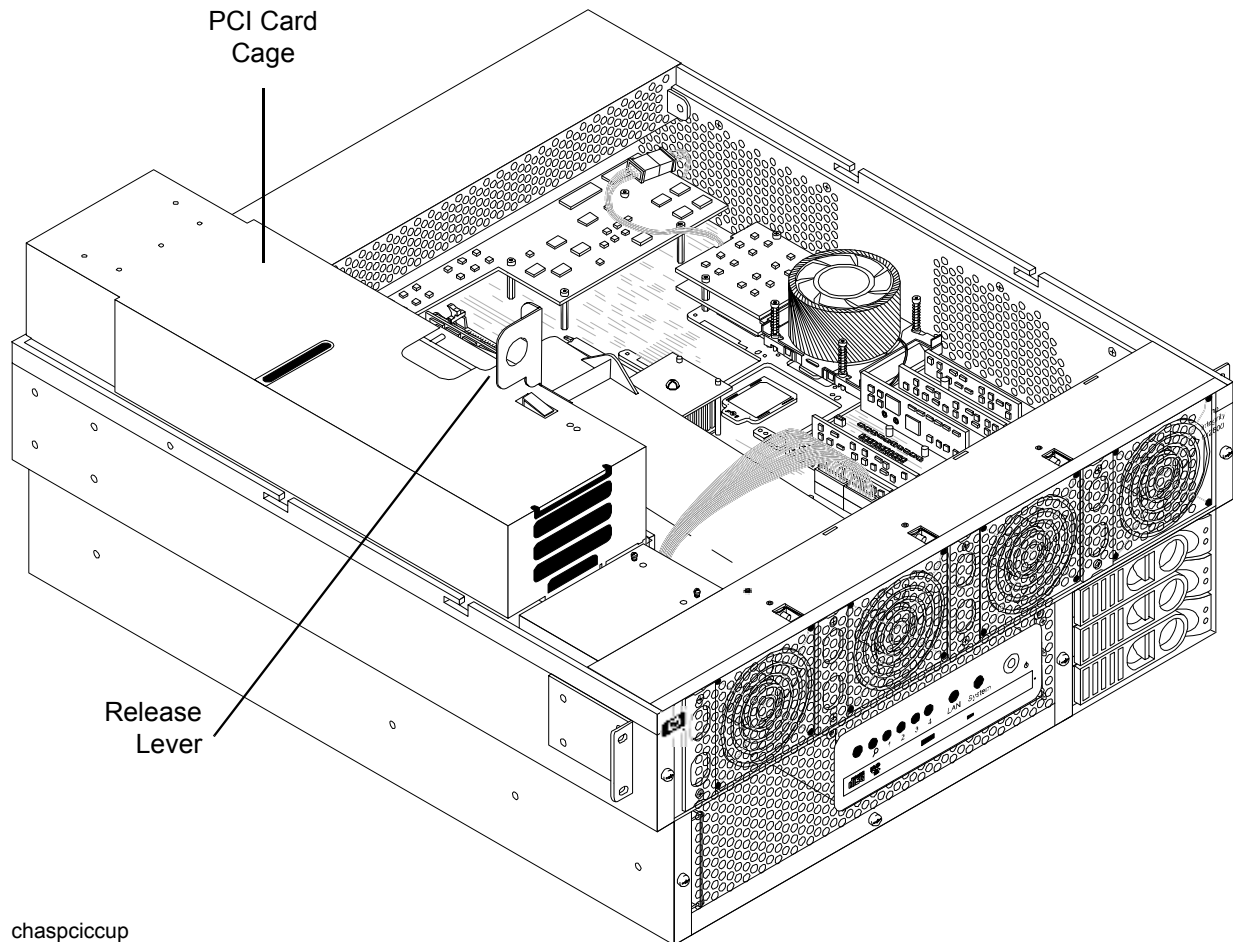
**CAUTION** Observe all ESD safety precautions while performing this procedure. Failure to follow ESD safety precautions could result in damage to the server.

---

**Step 1.** If the card cage cover has been removed, insert the cover tabs (fan end of cover) into the corresponding slots on the card cage and press the cover into position on the card cage. Slide the cover toward the front of the card cage to secure the cover in place.

**Step 2.** Orient the PCI card cage as shown in Figure 3-13. Lift the release lever and hold it in the open position. Lower the card cage into position and press gently to seat card cage connectors.

**Figure 3-13** Installing the PCI Card Cage



chaspciccup

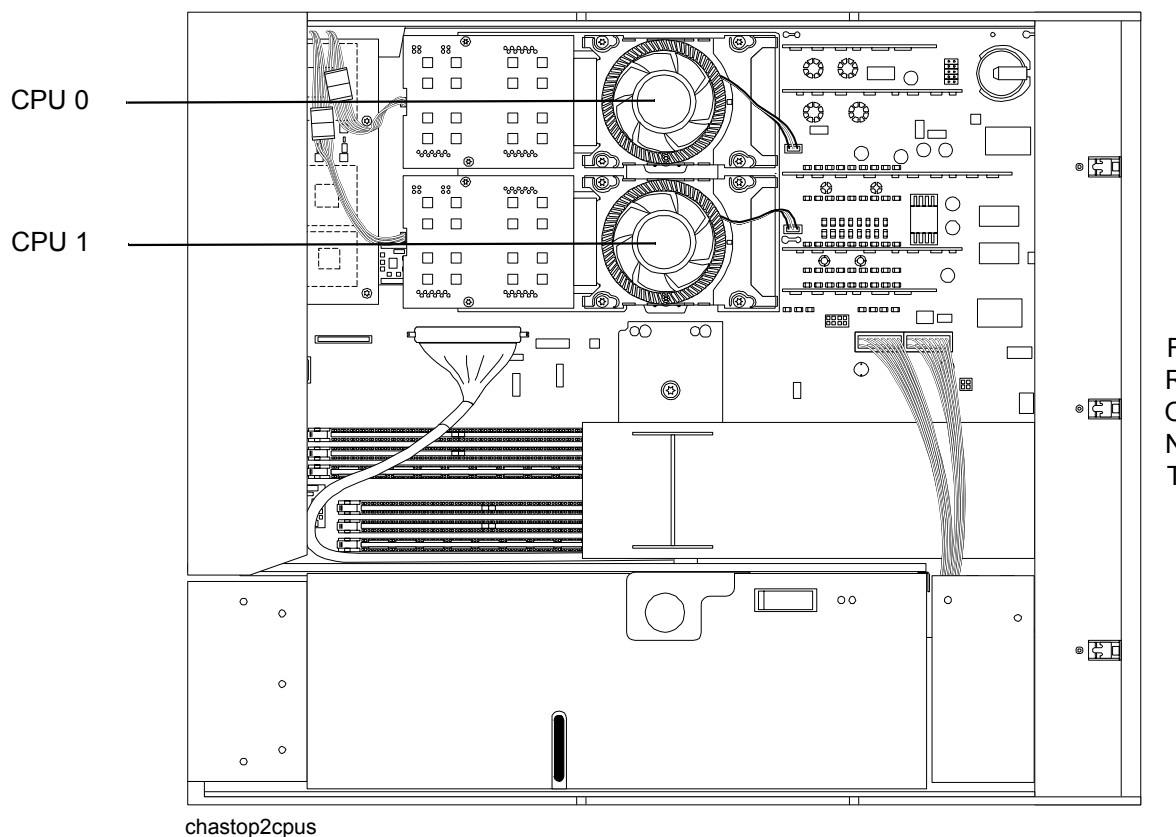
- Step 3.** Press the release lever down (into position) to lock the card cage in place in the chassis.
- Step 4.** Reinstall the chassis top cover. Refer to “Replacing the Top Cover” on page 26.
- Step 5.** Reconnect rear panel cables, and turn on the system.
- Step 6.** Run **info io** at the EFI shell to verify that the PCI card(s) has been correctly installed.

## Installing Processors and Memory

This section provides information about removing and installing processors and memory. The processors and memory are located on the system board and are accessible after removing the top cover and air guides. Processor 0 (CPU 0) is located closer to the chassis side panel and processor 1 (CPU 1) is located closer to the DIMM sockets. (See Figure 3-14.)

Your hp Integrity cx2600 Server may be delivered with one or two processors installed. You may wish to install the second processor, or replace the processors with newer, compatible processors. Additional or larger DIMMs may be available for installation. The following sections provide detailed procedures for removal and installation of processors and memory.

**Figure 3-14** Processors in Server Chassis (Top Cover Removed)



### Removing a Processor

To remove a processor, proceed as follows:

- Step 1.** If rack-mounted, extend the server out from the rack on slides until it stops. Refer to “Accessing a Rack Mounted Server” on page 15.

---

**WARNING** Voltages and hazardous energy can be present at various locations within the server whenever a power source is connected. This hazard is present even when the power switch is in the off position.

Ensure that the system is powered down and all power sources have been disconnected from the server prior to performing the following procedures.

Failure to observe this warning could result in personal injury or damage to equipment.

---

**Step 2.** Turn off the system. Disconnect all external cables.

**Step 3.** If desired, remove the server from the rack and place it on an ESD-protected work surface. Refer to “Remove the Server from a Rack” on page 16.

**Step 4.** Remove the chassis top cover. Refer to “Removing the Top Cover” on page 25.

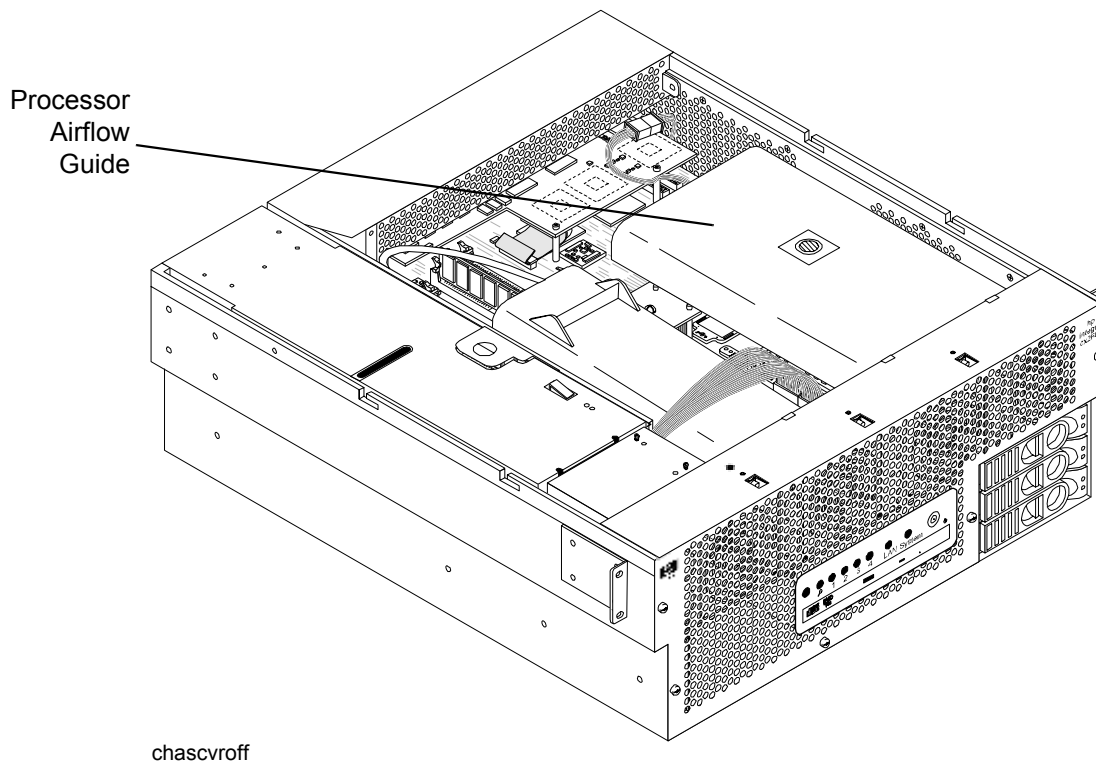
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**CAUTION** Observe all ESD safety precautions while performing processor removal. Failure to follow ESD safety precautions could result in damage to the server.

---

**Step 5.** Remove the processor airflow guide. (See Figure 3-15).

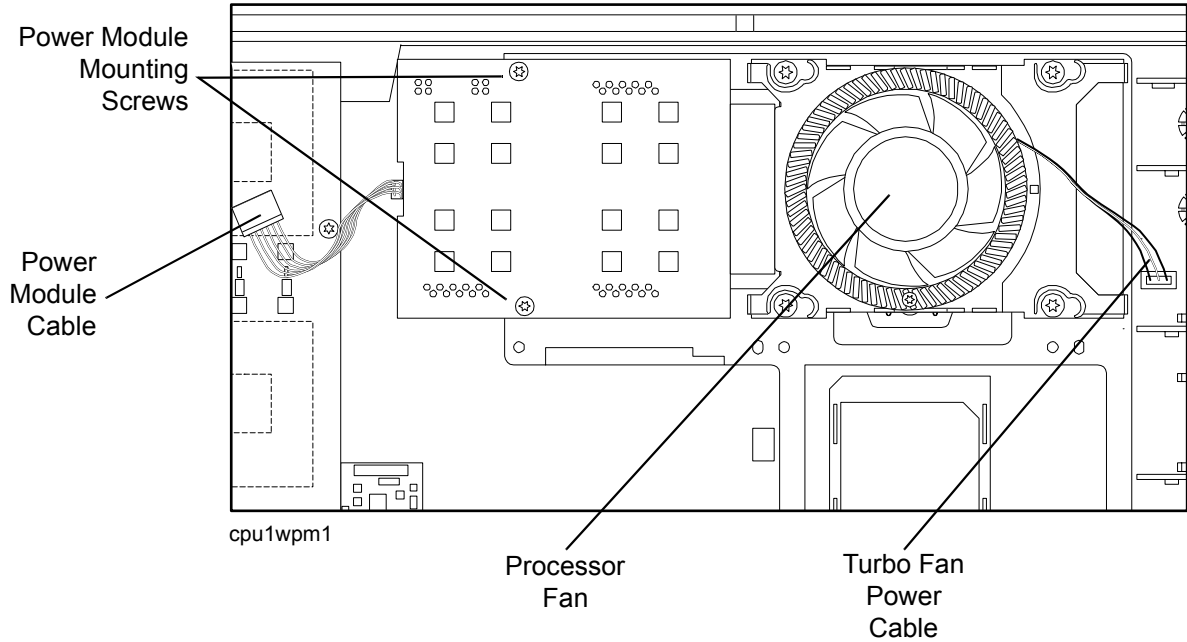
**Figure 3-15 Processor Airflow Guide**



**Step 6.** Unplug the CPU power module cable.

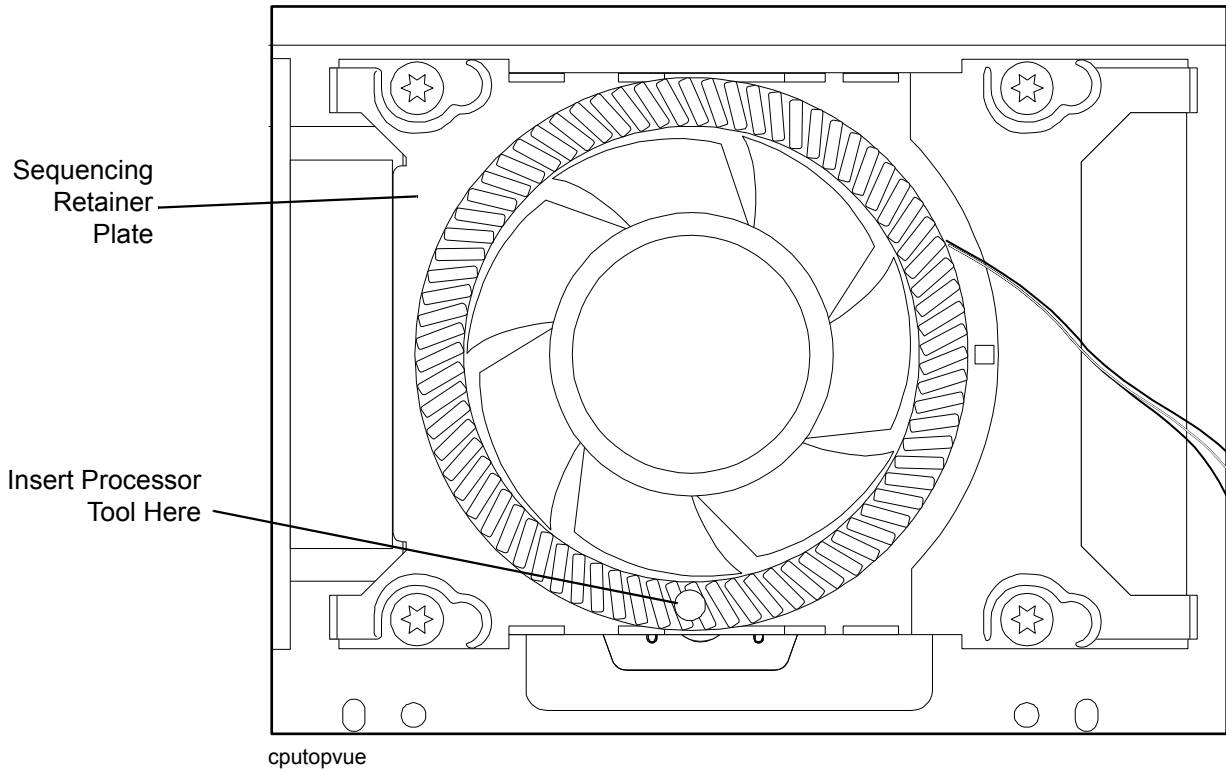
- Step 7.** Loosen the power module mounting screws and disconnect the module from its processor by sliding it toward the back of the chassis.

**Figure 3-16** Disconnecting the Power Module



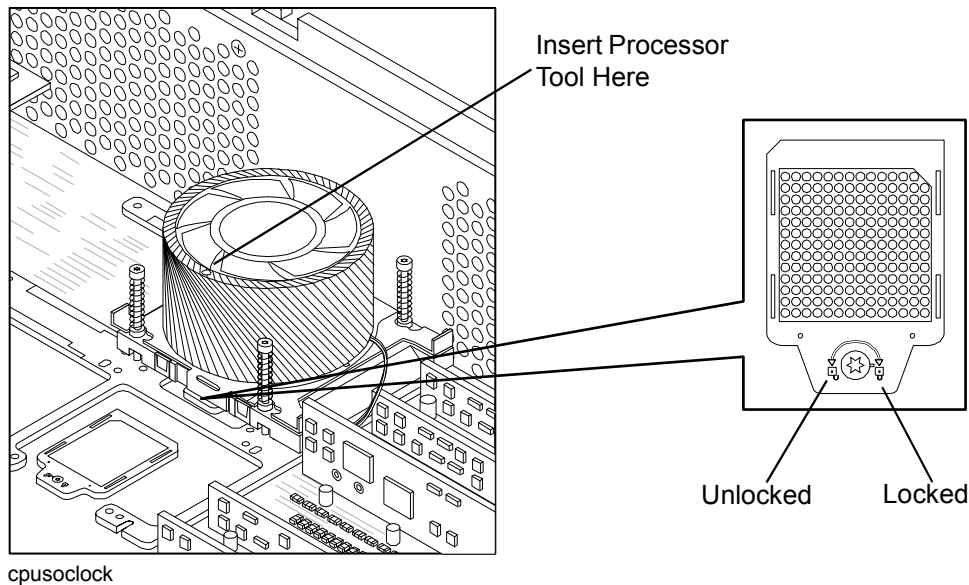
- Step 8.** Remove the CPU power module from the server chassis.
- Step 9.** Disconnect the turbo fan power cable.
- Step 10.** Loosen the four heatsink captive screws using the special processor tool that was shipped with your processor.
- Step 11.** Slide the sequencing retainer plate toward the back of the chassis to open the hole in the edge of the turbo fan heatsink for insertion of the special processor tool into the processor locking mechanism.

**Figure 3-17** Loosen the Turbo Fan Heatsink Screws



**Step 12.** Insert the processor tool into the hole that runs down through the edge of the turbo fan heatsink.

**Figure 3-18** Unlocking the Processor



**Step 13.** Unlock the processor locking mechanism by rotating the tool counterclockwise 180 degrees. (See Figure 3-18).

**Step 14.** Remove the turbo fan heatsink and processor from the chassis.

## Installing a Processor

The following procedure is applicable to installation of processor 0 or processor 1. Processor 0 must be installed before installing processor 1. Proceed as follows:

---

**NOTE** Installation instructions are provided with replacement processors. Read those instructions carefully. Changes in processor design (and installation) may have occurred since this procedure was written. Always follow the instructions provided with a replacement processor.

---

**Step 1.** If rack mounted, extend a slide-mounted server out from the rack until it stops. Refer to “Accessing a Rack Mounted Server” on page 15.

---

**WARNING** Voltages and hazardous energy can be present at various locations within the server whenever a power source is connected. This hazard is present even when the power switch is in the off position.

Ensure that the system is powered down and all power sources have been disconnected from the server prior to performing the following procedures.

Failure to observe this warning could result in personal injury or damage to equipment.

---

**Step 2.** Turn off the system. Disconnect all external cables.

**Step 3.** If desired, remove the server from the rack and place it on an ESD-protected work surface. Refer to “Remove the Server from a Rack” on page 16.

**Step 4.** Remove the chassis top cover. Refer to “Removing the Top Cover” on page 25.

---

**CAUTION** Observe all ESD safety precautions while performing processor installation. Failure to follow ESD safety precautions could result in damage to the server.

---

**Step 5.** Remove the processor airflow guide. (See Figure 3-15)

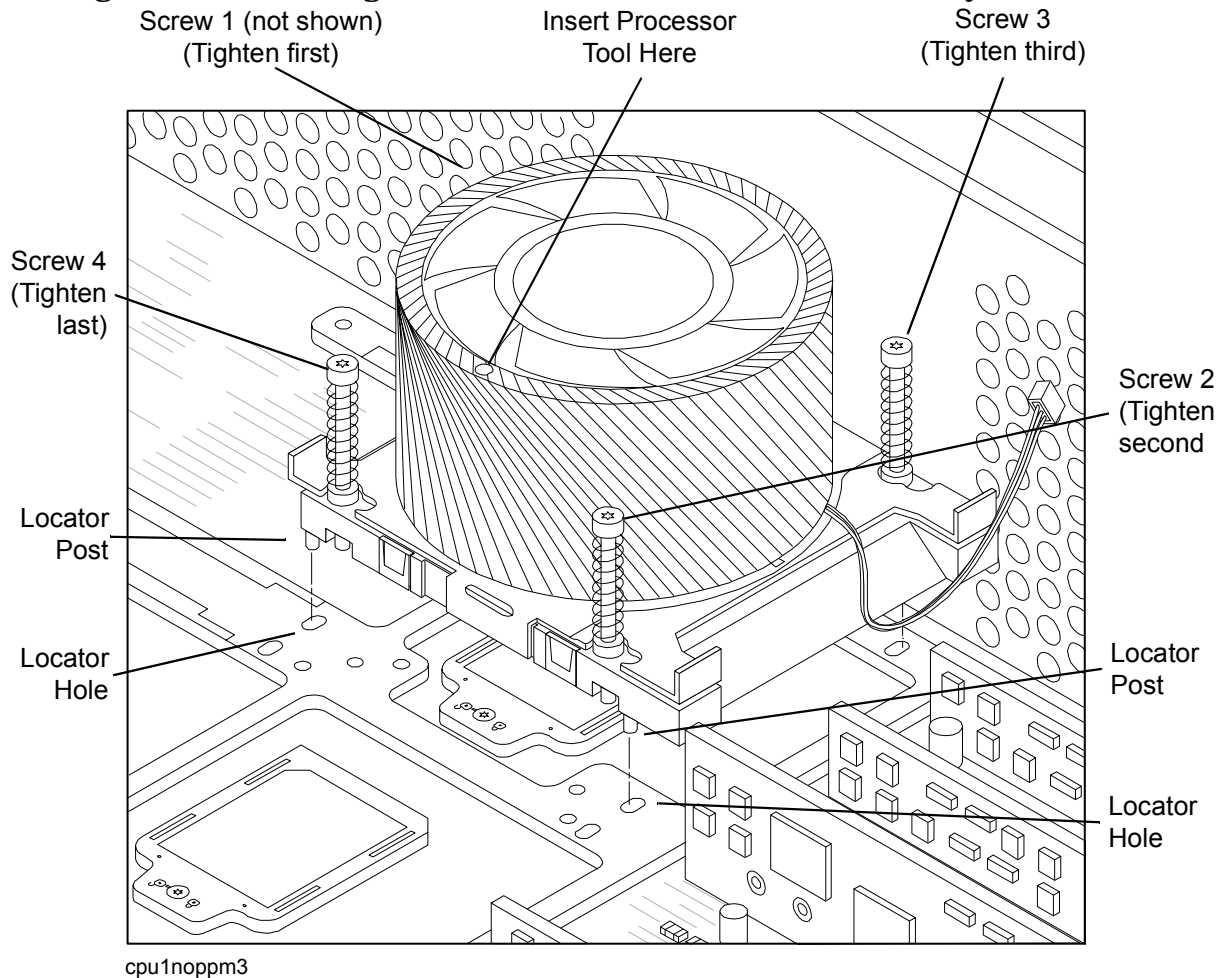
**Step 6.** Ensure that the processor locking mechanism is rotated to the unlocked position. (See Figure 3-18.)

**Step 7.** Inspect the pins of the processor to be installed. Verify that processor pin(s) are not bent.

**Step 8.** Use the four locator posts on the heatsink and the turbo fan power cable to properly align the fan and processor assembly on the system board. The four locator posts will fit in locator holes on the processor mount of the system board. The turbo fan power cable must be positioned so that it is located on the side of the heatsink that faces the front of the chassis.



**Figure 3-19** Installing the Turbo Fan and Processor Assembly



- Step 9.** Use the special processor tool shipped with processor assemblies to lock the processor in place on the system board. To do this, insert the special processor tool into the hole that runs down the side of the heatsink and rotate it clockwise 180 degrees.
- Step 10.** Slide the sequencing retainer plate toward the front of the system.
- Step 11.** Tighten the four captive screws of the heatsink in the order shown in Figure 3-19. Tighten each screw 1/2 turn, and then tighten the next screw. Continue this sequence until the heatsink is secured to the system board.
- Step 12.** Connect the power cable for the processor turbo fan to its connector on the system board.
- Step 13.** Slide the CPU power module on the system board metal mounting bracket so that the power module connector aligns with the connector on the processor. Align the two mounting screw holes on the power module with their screw holes on the system board's metal mounting bracket. Screw in the power module mounting screws.
- Step 14.** Connect the CPU power module power cable.
- Step 15.** Place the processor airflow guide in position.
- Step 16.** Install the chassis top cover. Refer to "Replacing the Top Cover" on page 26.

- Step 17.** If necessary, reinstall the chassis in the rack. Refer to “Install the Server into a Rack” on page 17.
- Step 18.** Reconnect power and system cables to rear panel connectors.
- Step 19.** Turn on the system.
- Step 20.** Run `info cpu` at the EFI shell prompt to verify that the processor has been installed correctly. Refer to Chapter 5 of this guide (Cable Connections) and to the *hp Integrity cx2600 Operation and Maintenance Guide* for information about connecting a console and using the EFI shell. (The *hp Integrity cx2600 Operation and Maintenance Guide* is included on the CD provided with your system).

## Installing Memory

Your hp Integrity cx2600 Server comes with 4, 8, or 12 DIMMs installed. The system is minimally configured with 1 GB of memory (four 256 MB DIMMs loaded in quad 0 (slots 0A, 0B, 1A, and 1B)). The system is maximally configured with 24 GB of memory (four 2 GB DIMMs loaded in each of quads 0, 1, and 2 (quad 0 slots 0A, 0B, 1A, and 1B, quad 1 slots 2A, 2B, 3A, and 3B, and quad 2 slots 4A, 4B, 5A, and 5B)).

You may replace these DIMMs, or insert DIMMs into unused quads if desired. When adding DIMMs, you must use a minimum of four like-sized DIMMs in the next available quad.

### Supported DIMM Sizes

Supported DIMM sizes are 256 MB, 512 MB, 1 GB, 2 GB. Dissimilar DIMM sizes may be used in the system, but all four DIMMs in each quad must be identical.

### Removing DIMMs

To remove a DIMM, perform the following steps:

---

**WARNING** Voltages and hazardous energy can be present at various locations within the server whenever a power source is connected. This hazard is present even when the power switch is in the off position.

Ensure that the system is powered down and all power sources have been disconnected from the server prior to performing the following procedures.

Failure to observe this warning could result in personal injury or damage to equipment.

---

- Step 1.** If rack mounted, extend a slide-mounted server out from the rack until it stops. Refer to “Accessing a Rack Mounted Server” on page 15.
- Step 2.** Turn off the system. Disconnect all external cables.
- Step 3.** If desired, remove the server from the rack and place it on an ESD-protected work surface. Refer to “Remove the Server from a Rack” on page 16.
- Step 4.** Remove the top cover from the chassis. Refer to “Front Grill and Top Cover” on page 23.

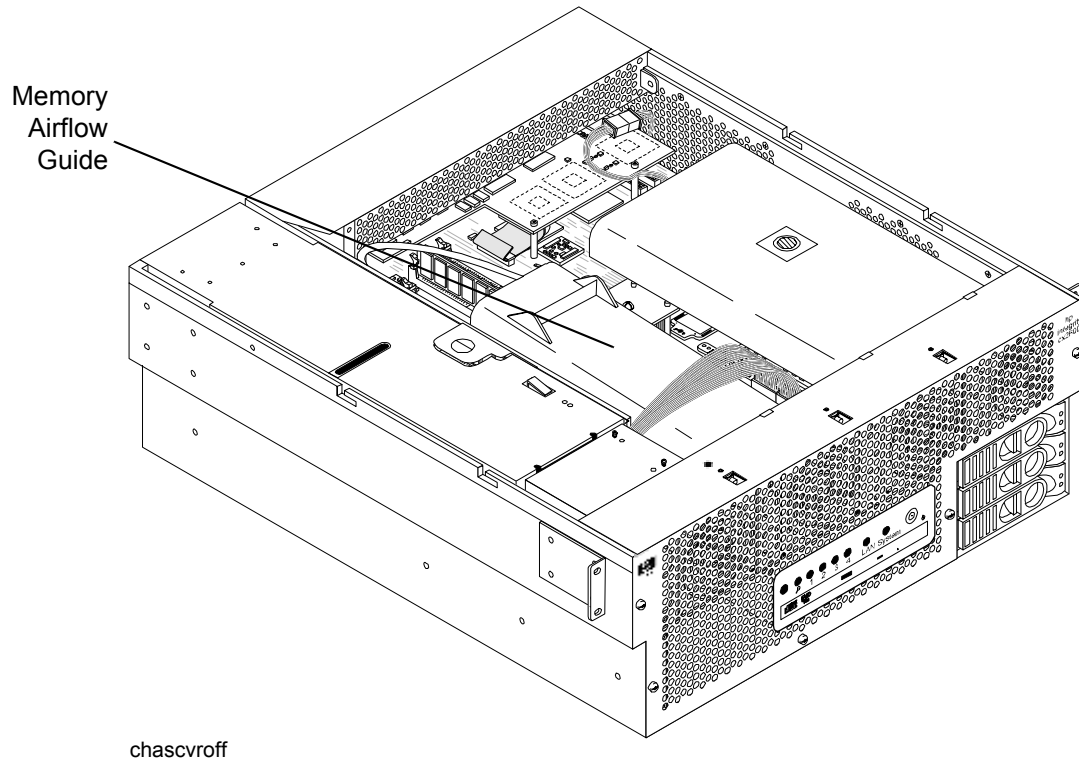
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**CAUTION** Observe all ESD safety precautions while performing DIMM removal. Failure to follow ESD safety precautions could result in damage to the server.

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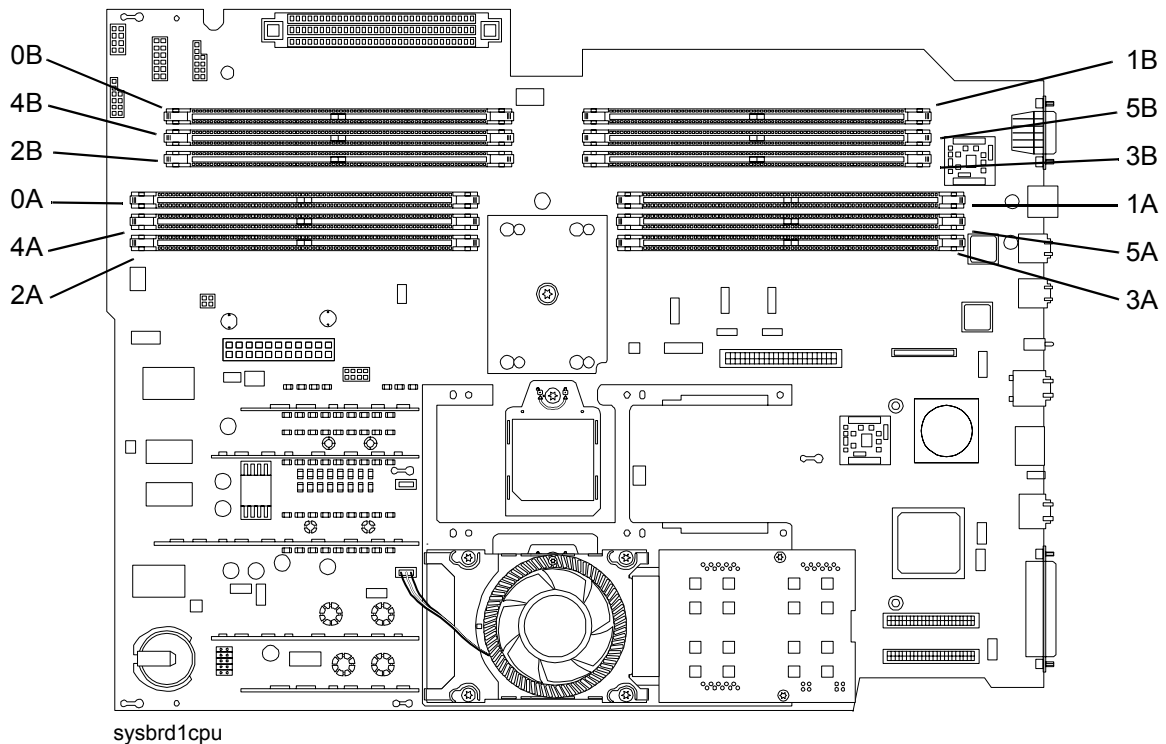
- Step 5.** Remove the memory airflow guide. (See Figure 3-20).

**Figure 3-20** Memory Airflow Guide



**Step 6.** Locate the DIMM(s) to be removed. (See Figure 3-21).

**Figure 3-21** DIMM Slots



- Step 7.** Press down on the DIMM retainer clips on either end of the DIMM connector, and lift the DIMM from the system board socket.
- Step 8.** If the removed DIMM is functional, store it for future use. (Store the DIMM in a static-free container.)
- Step 9.** Repeat steps 6 through 8 for each DIMM to be removed.
- Step 10.** If DIMMs will not immediately be installed, set the memory airflow guide in position and reinstall the top cover. Refer to “Replacing the Top Cover” on page 26.

### Installing DIMMs

DIMMs must be installed in groups of 4 (quads), and in specific locations. DIMM sockets are shown in Figure 3-21. The first quad (4 DIMMs) must be installed in sockets 0A, 0B, 1A, and 1B. The second quad must be installed in sockets 2A, 2B, 3A, and 3B. The third (and final) quad must be installed in sockets 4A, 4B, 5A, and 5B. If DIMMs of different sizes are to be installed, the smallest DIMMs (least memory) must be installed in the first quad. DIMMs in the second quad can be equal to or larger (more memory) than the DIMMs in the first quad. If DIMMs are to be installed in the third quad, they must be equal to or larger than the DIMMs in the second quad.

To install DIMMs, perform the following steps:

---

**WARNING** Voltages and hazardous energy can be present at various locations within the server whenever a power source is connected. This hazard is present even when the power switch is in the off position.

**Ensure that the system is powered down and all power sources have been disconnected from the server prior to performing the following procedures.**

**Failure to observe this warning could result in personal injury or damage to equipment.**

---

**NOTE** DIMMs must be installed in matched groups of four. DIMM sizes can vary between quads, but all DIMMs within a quad must be identical.

---

**Step 1.** If rack mounted, extend a slide-mounted server out from the rack until it stops. Refer to “Accessing a Rack Mounted Server” on page 15.

**Step 2.** Turn off the system. Disconnect all external cables.

**Step 3.** If desired, remove the server from the rack and place it on an ESD-protected work surface. Refer to “Remove the Server from a Rack” on page 16.

**Step 4.** Remove the top cover from the chassis. Refer to “Front Grill and Top Cover” on page 23.

---

**CAUTION** Observe all ESD safety precautions while performing DIMM installation. Failure to follow ESD safety precautions could result in damage to the server.

---

**Step 5.** Remove the memory airflow guide. (See Figure 3-20).

**Step 6.** Locate the DIMM sockets in which DIMMs will be installed. See Figure 3-21.

**Step 7.** Holding the DIMM by its edges, orient the DIMM such that the component side is facing the processors, then insert the DIMM into the appropriate socket.

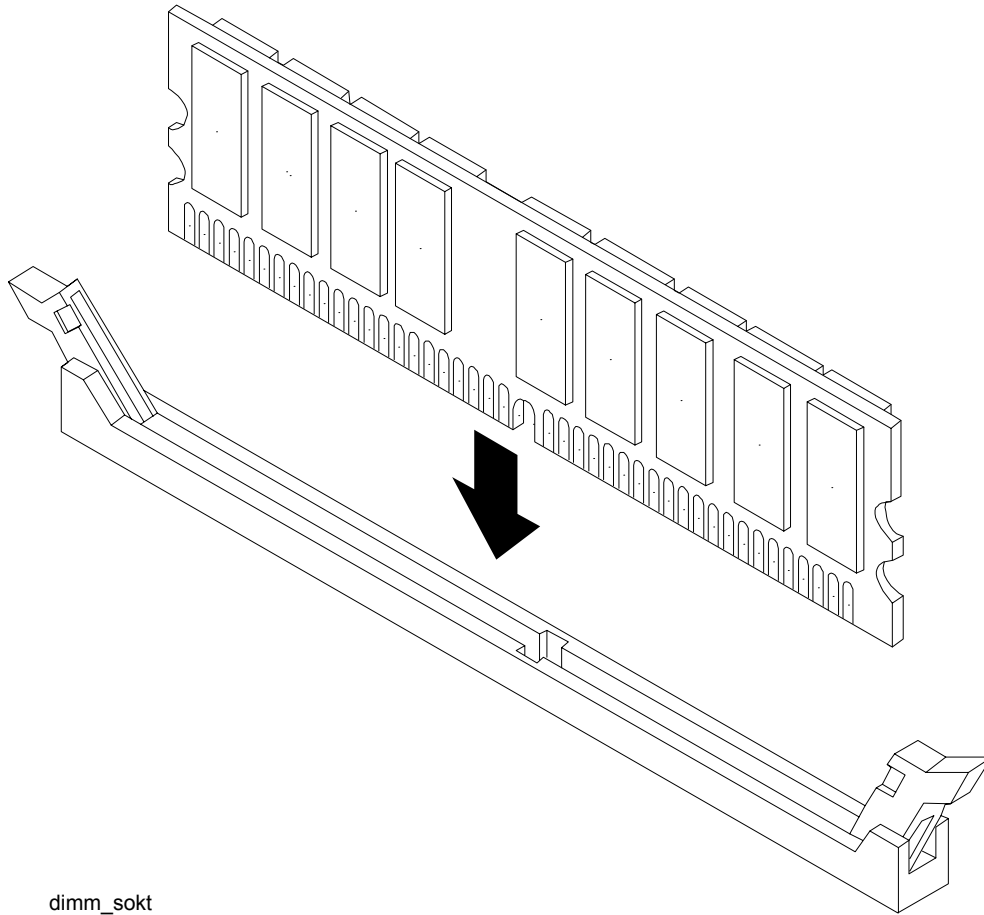
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**NOTE** DIMM connectors are keyed so that they can be installed in only the correct orientation.

---

**Step 8.** Gently and evenly push on each side of the DIMM until it seats in the socket. Observe that the socket retainer clips return to the upright position when the DIMM is fully inserted.

**Figure 3-22** Inserting DIMM into a DIMM Socket



dimmm\_sokt

- Step 9.** Snap the socket retainer clips into place, ensuring that the DIMM is locked in the socket.
- Step 10.** Repeat steps 6 through 9 for each DIMM to be installed.
- Step 11.** Set the memory airflow guide in position and reinstall the top cover.

---

# 4 Troubleshooting

---

## Introduction

This chapter presents troubleshooting information. Basic tips for start-up problems are presented, audio cues and LED indicators are described and interpreted, and error messages (and how to retrieve them) are described. In addition, problems that are associated with I/O functions and paths are discussed here.

---

## Troubleshooting Methodology

---

**WARNING** Always disconnect the power cords and unplug telephone cables before removing the server cover. Disconnect telephone cables to avoid exposure to shock hazard from telephone ringing voltages. Disconnect the power cords to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects such as tools or jewelry.

---

**CAUTION** Do not operate the server for more than 2 minutes with any cover (including power supplies and disk drives) removed. The covers also provide EMI containment and direct airflow within the chassis. Depending on which cover or assembly is missing, the server may shutdown, interrupting operations. In addition, damage to system components may result due to overheating.

You can safely remove the front grill while the HP Server is running to remove and replace hot-swap fans. The hot-swap power supplies and one hot-swap fan (accessible from the rear of the chassis) can be replaced at any time. For any other service activity requiring access to internal components, power down the server and observe all safety precautions.

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The server was tested prior to shipping and should be in perfect working order. Failures encountered during installation may be due to damage that occurred in transit. Reseating connectors may clear problems that result from rough handling. If you are installing components or assemblies, compatibility problems or incorrect installations may be the cause of problems. If you are installing components or assemblies, check that items are correctly installed and that all connectors are fully engaged. If the unit will not power on, check the power source before proceeding.

If a problem is encountered during initial operation, remove any add-in or optional components and retest the server before continuing. Verify basic server operation before installing additional cards and configuring software and hardware for your system requirements.

Troubleshooting is based on observation of server status indications and error messages, and by checking system event logs. The system e-buzzer will provide an immediate indication of any start-up problems. LED indicators can be observed on the front and rear of the server. Error messages are displayed on local and remote consoles. System history (console, event, and history logs) are available through the management processor, and can be accessed through the console. Additional information about troubleshooting can be found in the *hp Integrity cx2600 Operation and Maintenance Guide*.

Offline troubleshooting programs are available on the resource CD that is shipped with your HP Server. To troubleshoot your system you should be familiar with the Offline Diagnostics Environment (ODE) which runs in the Extensible Firmware Interface (EFI). Descriptions and user information about offline troubleshooting tools are available at <http://docs.hp.com>. The offline tools are available for downloading at <http://software.hp.com>.

## Using the Front Panel Power Button

The server power button on the front panel operates differently, depending on how long the button is held in and on what the system is doing when the button is pressed. You must be aware of its uses to properly troubleshoot the system.

If the server is off, and power is not connected to server power supplies, pressing the power button has no effect.

If the server is off, and power is connected to server power supplies, the front panel power LED will blink at a 1-Hz rate. In this state, standby power is available to server circuits, but main power is off. Pressing and holding the power button will accomplish the following:

- 1 – 3 seconds. System power turns on. The e-buzzer will beep if an error is encountered. (Refer to “Troubleshooting Using Beep Codes (System e-buzzer)” on page 50 for a description of the e-buzzer.)
- 3 – 5 seconds. The e-buzzer will repeat the last stored error message (beep code).

If the server is on and the system is at the EFI, pressing and holding the power button will accomplish the following:

- 1 – 3 seconds. System power turns off immediately (hard power down).
- 3 – 5 seconds. The e-buzzer will repeat the last stored error message (beep code).
- 5 seconds or longer. System power turns off immediately (hard power down).

If the server is on and the operating system is running, pressing and holding the power button will accomplish the following:

- 1 – 3 seconds. System power turns off (software controlled power down).
- 3 – 5 seconds. The e-buzzer will repeat the last stored error message (beep code).
- 5 seconds or longer. System power turns off immediately (hard power down).

## If the Server Will Not Power Up

Power problems during installation are usually related to the install process. If your server will not power up, check the LED indicators on the power supply rear panels. Refer to “Rear Panel LEDs” on page 57 and perform the following:

- If the DC In indicators are lit, it can be assumed that power is available to the server.
- If a fault indicator is lit, reseal the power supply. If the problem persists, remove and reseal boards within the server. If the problem still persists, replace the power supply and/or the power supply interface board.
- If the DC Out indicators are lit, it can be assumed that power is supplied to the server circuits. If the console shows that the server is powered up, but server LEDs indicate that power is off, remove and reseal connectors on the LED status board. (If the problem still persists, replace the LED status board.) If the console shows that the server is not powered up (server is off), remove and reseal connectors on the system board. (If the problem still persists, replace the power supply interface board, the MP board, or the system board.)



## If EFI Is Not Available

If it is not possible to reach the EFI (from either the main disk partition or CD), then you must use the following tools to help solve your problem:

- Front panel LEDs (page 52)
- Management processor (MP) (page 62)
  - Console messages
  - System event logs (SEL)

## If the Operating System Will Not Boot

If your operating system will not boot, but you are able to reach the EFI (from either the main disk partition or CD), then use the following tools to help solve your problem:

- Using the EFI shell, check the system logs and analyze any error messages. Refer to “Error Messages and Event Logs” on page 58. Refer to Chapter 5 of this guide (Cable Connections) and to the *hp Integrity cx2600 Operation and Maintenance Guide* for information about connecting a console and using the EFI shell. (The *hp Integrity cx2600 Operation and Maintenance Guide* is included on the CD provided with your system.)
- Offline Diagnostic Environment (ODE) (page 63)
- E-Diag Tools (page 64)

## If the Operating System Will Boot

If your operating system is running and you are experiencing problems, use the following tools to help solve your problem.

- Beep Codes (page 50)
- LEDs (page 51)
- Error Messages and event logs (page 58)

## If Intermittent Server Problems Occur

Intermittent problems that occur during installation can usually be traced to power source problems, to a loose connector, or to some other hardware problem. If you are experiencing intermittent problems, proceed as follows:

- Check MP logs and analyze the problem. (Determine if there is more than one symptom and if the problem is random.) Refer to “Management Processor (MP) Event Logs” on page 62.
- Verify that the DC power source is stable and within the –40 to –72 VDC range.
- Reseat all rear panel connectors.
- Reseat all hot-swappable fans and power supplies.
- Reseat all main memory DIMMs.
- Reseat all internal connectors (cable harness and board connectors).

## If DVD Problems Occur

DVD problems that occur during installation are usually related to faulty connections. If you are experiencing DVD problems, proceed as follows:

- Remove and reinsert the disk.
- Replace the disk.
- Remove and reinstall the DVD drive. Check that connectors are fully engaged.
- Replace the DVD drive.

## If Hard Drive Problems Occur

Hard drive problems that occur during installation are usually due to rough handling. The drive(s) may not be correctly seated or may have been damaged in transit. If you are experiencing hard drive problems, proceed as follows:

- Remove and reinsert the suspect hard drive(s).
- Swap the hard drive with one from another slot or with a known good spare.
- Remove and reinstall the hard drive backplane. Check that connectors are fully engaged.
- Replace the hard drive backplane.

## If Console Problems Occur

Console problems during installations can be caused by faulty interconnections. If you are experiencing monitor, keyboard, or mouse problems, proceed as follows:

- Check the monitor controls. Adjust contrast and brightness as required.
- Inspect all power and interconnecting cables. Check that all console connectors are fully engaged.
- Check that all MP board connectors are fully engaged.
- Exercise the appropriate self-test features of the console software.

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## Troubleshooting Using Beep Codes (System e-buzzer)

If a problem is detected when the system is booting, or when it is running, the system e-buzzer emits a series of audible beeps that present an encoded error message. The e-buzzer emits a different number of beeps for each type of error. If you do not hear the beeps, or may have miscounted beeps, you can repeat the message by pressing the front panel power button for 3 to 5 seconds. (Release the power button when you first hear the e-buzzer. Do not press the power button for more than 5 seconds).

The e-buzzer emits a modem-like sound that is repeated three times. Next, the e-buzzer emits a beep code consisting of 0 to 7 beeps occurring at 1 second intervals. Each beep lasts 1 second. The e-buzzer does not report all problems—only the error conditions described here. If the e-buzzer describes an error, check the front panel LEDs and the system logs for additional information.

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**NOTE** The error message and identifying information can be sent via telephone line to an authorized help desk or to an HP Support facility. This telephone signal can be decoded to identify the server by model and serial number, and to help identify the error. To send this signal to HP Support via telephone, just hold the telephone next to the Locator button on the server front panel while the system is booting.

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The beep codes provide only general information. If you hear an error code, always check the LEDs and system logs before replacing components. The LEDs and system error messages can help you identify the failing item or assembly.

**Table 4-1 Beep Code Descriptions**

Number of Beeps	Suspect Component	Description
1	Processor	Processor absent or not correctly connected: Reseat or replace processor.
2	Power Supply	Power supply failure: Replace power supply.
3	Memory	Memory failure: Check that matched DIMMs are correctly installed, replace DIMMs as appropriate.
4	MP Card	Management processor card malfunction: Reseat or replace the Management processor card.
5	PCI Card	PCI I/O card malfunction: Reseat or replace the PCI card.
6	Critical System Failure	Two minutes have elapsed after BMC system startup and no BOOT_START event has been logged into the System Event Log.  Possible causes include: a. System clock failed b. System board malfunction c. Bad CPU connection to mother board connection d. CPU power pod malfunction e. CPU malfunction f. System firmware bad
7	System Board	Defective system board: Contact HP Support for assistance.

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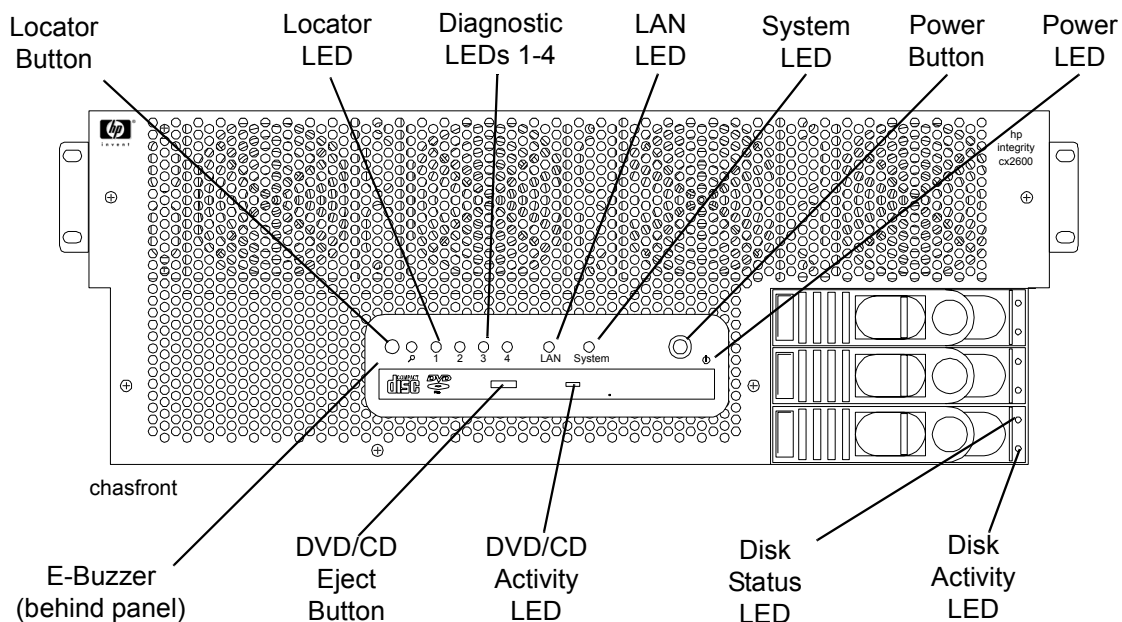
## Troubleshooting Using LED Indicators

Your hp Integrity cx2600 Server has LED indicators located on the front and rear of the server that you can use to determine what repair action is required. (Additional LEDs within the server are described in the *hp Integrity cx2600 Operation and Maintenance Guide*, which is included on the CD provided with your system.) Descriptions of front and rear panel LEDs are provided in the following sections.

## Front Panel LEDs

The front panel LEDs show you the system status at a glance. They include four diagnostic LEDs, and the System, LAN, and power LEDs. The front panel LEDs are listed in the following tables, together with system status and/or probable cause descriptions of likely system failures.

**Figure 4-1 Front Panel LEDs**



**Table 4-2 Front Panel LED Definitions**

LED/ Button	System State	Flash Rate	Color	Description
System LED	Off	Off	Off	System is off.
System LED	Running	Flashing at 0.5 Hz	Green	System is booting or running EFI.
System LED	Running	Steady	Green	System normal—the operating system is up and running.
System LED	Warning	Flashing at 1 Hz	Amber	Attention required. Check the four diagnostic LEDs and the MP Status log for information. The LED will turn off when the MP log is accessed.
System LED	Fault	Flashing at 2 Hz	Red	Fault detected. Check the four diagnostic LEDs and the MP Status log for information. The LED can be turned off by the MP DC command, or by correcting the problem.

**Table 4-2 Front Panel LED Definitions (Continued)**

<b>LED/ Button</b>	<b>System State</b>	<b>Flash Rate</b>	<b>Color</b>	<b>Description</b>
Diag LEDs (1 thru 4)	–	–	–	Display system error condition (when System LED is flashing yellow) or fault condition (when System LED is flashing red). Refer to Table 4-3 for error code information.
LAN LED	Off	Off	N/A	The system is off (no power to LAN circuits) or hardware failure.
LAN LED	Active	Steady	Green	LAN link is established but LAN is inactive.
LAN LED	Active	Flashing at rate of LAN activity	Green	LAN is active.
Disk Activity LED	Off	Off	Off	Disk not active.
Disk Activity LED	Active	Flashing at rate of LAN activity	Green	Disk is active.
Disk Status LED	Off	Off	Off	Pass through mode.
Disk Status LED	Off	Steady	Amber	Drive fault.
Disk Status LED	Active	Steady	Green	Drive operating normally.
CD Activity LED	Active	Flashing at rate of LAN activity	Green	Disk is active.
Locator LED/Button	(Flag)	Flashing at 1 Hz	Blue	System locator LED may be remotely or locally activated/deactivated to call attention to a particular server.
Power LED	No power	Off	Off	DC power not available to the server.
Power LED	Standby power	Flashing at 1 Hz	Green	DC power is connected to the server, but power is off. Standby power (3.3V) is applied to some server circuits.
Power LED	Main power on	Steady	Green	Power is applied to all server circuits.

**Table 4-3 Diagnostic LED Displays and Meanings**

<b>Diag 1 LED</b>	<b>Diag 2 LED</b>	<b>Diag 3 LED</b>	<b>Diag 4 LED</b>	<b>System LED</b>	<b>Description</b>
Off	Off	Green	Red	Flashing Yellow	Fan 3 warning. BMC is reporting that one fan rotor is turning more slowly than expected (or stopped). Investigate problem at the first opportunity.
Off	Green	Off	Red	Flashing Yellow	Fan 2 warning. BMC is reporting that one fan rotor is turning more slowly than expected (or stopped). Investigate problem at the first opportunity.
Off	Green	Green	Red	Flashing Yellow	Fan 5 warning. BMC is reporting that one fan rotor is turning more slowly than expected (or stopped). Investigate problem at the first opportunity.
Off	Red	Green	Red	Flashing Yellow	Power supply 2 warning. The power supply is functioning but reporting an error condition. Replace the power supply at the first opportunity.
Off	Red	Red	Off	Flashing Yellow	No video warning. No video output is available from the management processor. Replace the MP board.
Green	Off	Off	Red	Flashing Yellow	Fan 1 warning. BMC is reporting that one fan rotor is turning more slowly than expected (or stopped). Investigate problem at the first opportunity.
Green	Green	Off	Red	Flashing Yellow	Fan 4 warning. BMC is reporting that one fan rotor is turning more slowly than expected (or stopped). Investigate problem at the first opportunity.
Green	Green	Red	Off	Flashing Yellow	System battery voltage low. Replace the system battery.
Green	Red	Off	Red	Flashing Yellow	Power supply 1 warning. The power supply is functioning but reporting an error condition. Replace the power supply at the first opportunity.
Red	Off	Green	Green	Flashing Yellow	Memory load order warning. Verify that DIMMs are correctly installed.
Red	Green	Green	Red	Flashing Yellow	Intake air temperature hot. Check for blockage. Clean air intake openings.
Red	Red	Off	Green	Flashing Yellow	CPU 1 temperature warning. Check for blockages. Investigate the problem at the first opportunity.

**Table 4-3 Diagnostic LED Displays and Meanings (Continued)**

<b>Diag 1 LED</b>	<b>Diag 2 LED</b>	<b>Diag 3 LED</b>	<b>Diag 4 LED</b>	<b>System LED</b>	<b>Description</b>
Red	Red	Green	Off	Flashing Yellow	CPU 0 temperature warning. Check for blockages. Investigate the problem at the first opportunity.
Red	Red	Red	Red	Flashing Yellow	Undefined error condition (warning only). Check the SEL for information.
Off	Off	Green	Red	Flashing Red	Fan 3 failure. BMC is reporting that both fan rotors are turning more slowly than expected (or stopped). Replace the fan, fan control board, or system board.
Off	Green	Off	Red	Flashing Red	Fan 2 failure. BMC is reporting that both fan rotors are turning more slowly than expected (or stopped). Replace the fan, fan control board, or system board.
Off	Green	Green	Red	Flashing Red	Fan 5 failure. BMC is reporting that both fan rotors are turning more slowly than expected (or stopped). Replace the fan, fan control board, or system board.
Off	Green	Red	Off	Flashing Red	VRM overvoltage fault. Replace the system board.
Off	Red	Off	Off	Flashing Red	System firmware error. Power down the server, wait 20 seconds and resume operation. If the problem continues, replace the system board.
Off	Red	Off	Red	Flashing Red	VRM power pod fault. Replace the system board.
Off	Red	Green	Red	Flashing Red	Power supply 2 fault. Replace power supply 2, the power supply interface board, or the system board.
Green	Off	Off	Red	Flashing Red	Fan 1 failure. BMC is reporting that both fan rotors are turning more slowly than expected (or stopped). Replace the fan, fan control board, or system board.
Green	Off	Green	Red	Flashing Red	CPU 1 turbofan failure. Replace CPU 1, the CPU power module, or the system board.
Green	Off	Red	Off	Flashing Red	VRM undervoltage fault. Replace the system board.

**Table 4-3 Diagnostic LED Displays and Meanings (Continued)**

<b>Diag 1 LED</b>	<b>Diag 2 LED</b>	<b>Diag 3 LED</b>	<b>Diag 4 LED</b>	<b>System LED</b>	<b>Description</b>
Green	Green	Off	Red	Flashing Red	Fan 4 failure. BMC is reporting that both fan rotors are turning more slowly than expected (or stopped). Replace the fan, fan control board, or system board.
Green	Green	Green	Red	Flashing Red	CPU 0 turbofan failure. Replace CPU 0, the CPU power module, or the system board.
Green	Red	Off	Red	Flashing Red	Power supply 1 fault. Replace power supply 1, the power supply interface board, or the system board.
Green	Red	Green	Red	Flashing Red	12V range error. Something is loading the 12V source. This can be either power supply, the power supply interface, the system board, or any using circuit. Replace items (1 at a time) to identify the cause.
Red	Off	Off	Green	Flashing Red	Memory bank error. Verify that DIMMs are correctly installed.
Red	Green	Off	Off	Flashing Red	Memory mismatch fault. DIMMs of different size are installed in a single quad. Replace DIMMs as required.
Red	Green	Green	Off	Flashing Red	Memory access fault. Check error messages in the SEL. Reseat or replace DIMMs as required.
Red	Green	Green	Green	Flashing Red	Memory error detected. Check error messages in the SEL. Reseat or replace DIMMs as required.
Red	Green	Green	Red	Flashing Red	Intake air overtemperature fault. Check for blockages. Replace the system board.
Red	Green	Red	Off	Flashing Red	BMC firmware error. Power down the server, wait 20 seconds and resume operation. If the problem continues, replace the system board.
Red	Green	Red	Green	Flashing Red	MP firmware error. Power down the server, wait 20 seconds and resume operation. If the problem continues, replace the management processor.
Red	Red	Off	Green	Flashing Red	CPU 1 overtemperature fault. Check for blockages. Replace CPU 1 or the system board.
Red	Red	Green	Off	Flashing Red	CPU 0 overtemperature fault. Check for blockage. Replace CPU 0 or the system board.
Red	Red	Green	Green	Flashing Red	Either or both CPUs not detected. Check CPU installation and replace CPU, power module, or system board if necessary.



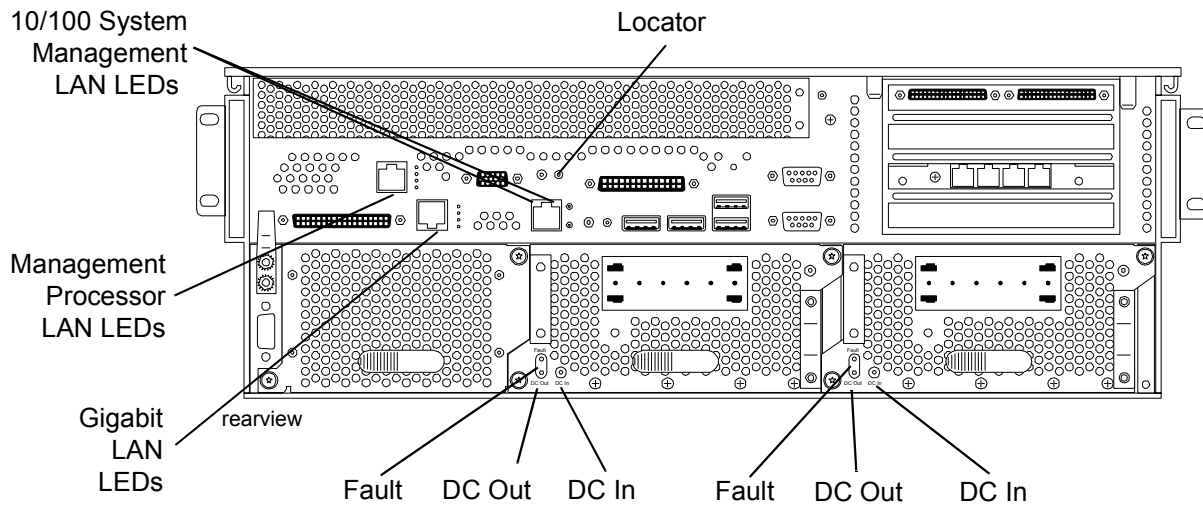
**Table 4-3 Diagnostic LED Displays and Meanings (Continued)**

Diag 1 LED	Diag 2 LED	Diag 3 LED	Diag 4 LED	System LED	Description
Red	Red	Red	Red	Flashing Red	Undefined error condition (catastrophic failure). Check the SEL for information.

**Rear Panel LEDs**

The rear panel LEDs show you LAN and power supply status at a glance. The rear panel LEDs are listed in the following table, together with descriptions of LAN and power status indications. Additional information about these LEDs is provided in the *hp Integrity cx2600 Operation and Maintenance Guide*. (The *hp Integrity cx2600 Operation and Maintenance Guide* is included on the CD provided with your system.)

**Figure 4-2 Rear Panel LEDs**



**Table 4-4 Rear Panel LED Definitions**

LED/ Button	Color	Description
System Management LAN Activity LED	Green	When lit, shows that port is linked.
System Management LAN Speed LED	Green	When off (and Activity LED is lit), shows that port is linked to 10 Mb LAN. When lit, shows that port is linked to 100 Mb LAN.
Locator	Blue	Lit by pressing the associated button, by pressing the corresponding button on the front panel, or by command from a remote location. Identifies one server among many.
Power Supply Fault	Amber	Lit when a power supply failure has been detected. Indicates that power supply has been cycled down or is not fully functional.

**Table 4-4 Rear Panel LED Definitions (Continued)**

LED/ Button	Color	Description
Power Supply DC Out	Green	Lit when a power supply is operating normally. Indicates that DC power is being supplied to server circuits.
Power Supply DC In	Green	Lit when power (–36 to –72 VDC) is being supplied to the power supply. Indicates that source power is available.
Gigabit LAN Gbit LED (top)	Green	When off, no 1000 Mbps link has been detected. When lit, port is linked at 1000 Mbps.
Gigabit LAN 100 Mbit LED (2nd from top)	Green	When off, no 100 Mbps link has been detected. When lit, port is linked at 100 Mbps.
Gigabit LAN Link LED (2nd from bottom)	Green	When off, no 10 Mbps link has been detected. When lit, port is linked at 10 Mbps.
Gigabit LAN Activity LED (bottom)	Green	When off, no LAN activity has been detected. When lit, port is linked at 1000 Mbps.
Management Processor Self Test LED (top)	Green	When off, self test is not active. When lit, MP is running self test.
Management Processor 10BT LED (2nd from top)	Green	When off, no link detected or 100BT link is active. When flashing, indicates 10BT LAN activity. When lit steady, indicates that 10BT link has been established.
Management Processor 100BT LED (2nd from bottom)	Green	When off, no link detected or 10BT link is active. When flashing, indicates 100BT LAN activity. When lit steady, indicates that 100BT link has been established.
Management Processor LAN Standby Power LED (bottom)	Green	When off, standby power is not applied to Management LAN circuits. When lit, power is connected to the server but the server is not on.

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## Error Messages and Event Logs

Server firmware and management features monitor system operation, report errors, and log all significant events. This section presents error message and log information. Refer to the *hp Integrity cx2600 Operation and Maintenance Guide* for additional information and instructions to access error messages and logs.

## EFI Error and Warning Messages

EFI error and warning messages are displayed on the console as part of the boot process. They can also be retrieved using the EFI command: **info warnings**. Table 4-5 lists the error messages that may be encountered during installation. Refer to the *hp Integrity cx2600 Operation and Maintenance Guide* for additional information. It can be found on the *HP Server Documentation CD-ROM* which is provided with your hp Integrity cx2600 Server.

**Table 4-5**            **EFI Error and Warning Messages**

<b>Error Number</b>	<b>Message</b>	<b>Description/Solution</b>
2	Insufficient resources to assign to 1 or more I/O devices	Incorrect I/O configuration. Contact the HP Support center for assistance.
4	Unexpected hardware I/O configuration	Incorrect I/O configuration. Contact the HP Support center for assistance.
7	No BMC installed in platform	Update BMC firmware.
8	BMC cannot be accessed	Check system logs for errors. Replace the system board.
9	One or more BMC ports failed	Communication with the BMC failed. Check power. Replace the system board.
10	BMC system event log is full	Clear the SEL.
11	Platform SCR is bad	Contact the HP Support center for assistance.
12	Set time to BMC SEL failed	Communication with the BMC failed. Replace the system board.
13	SEL get info failed	Communication with the BMC failed. Replace the system board.
14	Initial BMC SEL event failed	—Communication with the BMC failed. Replace the system board.
15	Update of BMC buffered data failed	Communication with the BMC failed. Replace the system board.
16	All ACPI BMC ports bad	Communication with the BMC failed. Replace the system board.
17	Read error on BMC token	Communication with the BMC failed. Replace the system board.
18	BMC token transmit checksum error	Communication with the BMC failed. Replace the system board.
19	Error writing BMC token on download	Communication with the BMC failed. Replace the system board.
20	NVM token access error	Communication with the BMC failed. Replace the system board.

**Table 4-5 EFI Error and Warning Messages (Continued)**

<b>Error Number</b>	<b>Message</b>	<b>Description/Solution</b>
21	BMC token write error during NVM write through	Communication with the BMC failed. Replace the system board.
22	Error reading BMC token on upload to NVM	Communication with the BMC failed. Replace the system board.
23	Error reading BMC first boot token	Communication with the BMC failed. Replace the system board.
24	Primary FIT failed	Reflash firmware.
25	Secondary FIT failed	Reflash firmware.
26	PAL A warning. One copy of PAL is bad	Reflash firmware.
27	PAL A warning. PAL is not compatible with at least 1 CPU	Update firmware.
28	Memory errors detected and PDT is disabled	Reseat DIMMs, if error persists replace bad DIMMs.
30	Memory required reinterleave to get a good page 0	Information only, no action required.
31	One or more ranks have chipspare disabled	Information only, no action required.
33	1 or more memory ranks are mismatched or deallocated	Check memory installation. Match DIMM part numbers within each quad.
34	Memory deallocated because of a loading error	Check memory installation. DIMMs must be installed with smallest capacity in the first quad, an equal or larger capacity in the second quad, and an equal or largest capacity in the third quad.
35	Memory load order error	Check memory installation. DIMMs must be installed with smallest capacity in the first quad, an equal or larger capacity in the second quad, and an equal or largest capacity in the third quad.
36	The PDT is full	Clear with pdt clear command in EFI shell.
37	At least one (1) CPU has bad fixed core ratio	Check processor installation. (Verify installation and that identical processors have been installed.)
38	All CPUs were slated for compatibility deconfig	Processor failure. Verify installation, then replace processor. Contact the HP Support center for assistance.
39	Incompatible CPUs detected	Check processor installation and match CPU part numbers. CPUs must be identical.

**Table 4-5 EFI Error and Warning Messages (Continued)**

<b>Error Number</b>	<b>Message</b>	<b>Description/Solution</b>
40	CPUs installed with mixed cache sizes	Check processor installation and match CPU part numbers. CPUs must be identical.
40	CPUs installed with mixed cache sizes	Check processor installation and match CPU part numbers. CPUs must be identical.
41	CPUs installed with mixed steppings	Check processor installation and match CPU part numbers. CPUs must be identical.
42	All CPUs are over clocked	Check processor installation and match CPU part numbers. CPUs must be identical.
43	At least one (1) CPU is over clocked	Check processor installation and match CPU part numbers. CPUs must be identical.
44	Monarch changed to lowest stepping CPU	Information only. If the message is repeated, contact the HP Support center for assistance.
46	CPUs loaded in wrong order	Reload processors in correct order.
48	SAL NVM cleared	Information only, no action required.
49	EFI NVM cleared	Information only, no action required.
50	EFI NVM failed	Reboot the server. If the error message is repeated, contact the HP Support center for assistance.
51	CPU deconfigured by SAL_B	Check processor installation. (Verify installation.) Replace processor that was deconfigured.
52	A ROM revision is inconsistent with FIT or REVBLOCK	One or more firmware components (fw, bmc, mp) is out of date.
53	Error building S MBIOS	Contact the HP Support center for assistance.
54	Failure constructing the EFI Memory Data Table (MDT)	Contact the HP Support center for assistance.
55	UUID error	Update with <code>sysset</code> command.
56	Error reading CPU S MBUS information ROM	Reboot the server. If the error message is repeated, replace the failing processor.
57	Error accessing FRU information	Replace the FRU which was reported. If the error message is repeated, contact the HP Support center for assistance.
58	Checksum error accessing FRU information	Replace the FRU which was reported. If the error message is repeated, contact the HP Support center for assistance.

**Table 4-5**                    **EFI Error and Warning Messages (Continued)**

<b>Error Number</b>	<b>Message</b>	<b>Description/Solution</b>
59	FRU information version error	Replace the FRU which was reported. If the error message is repeated, contact the HP Support center for assistance.

## Event Logs

The System Event Log (SEL) and Forward Progress Log (FPL), Live Event Log, and Boot logs are available via the MP. The SEL records system events that are of major importance to system operations. All entries for the SEL are forwarded to the FPL. The FPL contains system events, forward progress messages from the BMC, and status/error messages from system firmware, EFI, and from the operating system. The Live Event and Boot Logs record operating events as they occur.

You can view these logs using the MP. Only basic information is provided here. For complete information, refer to the *hp Integrity cx2600 Operation and Maintenance Guide*. It can be found on the *HP Server Documentation CD-ROM* which is provided with your hp Integrity cx2600 Server.

## Management Processor (MP) Event Logs

The MP interface provides diagnostic and configuration capabilities. To access your MP interface, perform the following steps:

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**NOTE**                    The MP interface must be accessed from a terminal console which is attached to the MP via the MP LAN or MP remote serial connector. Refer to the *hp Integrity cx2600 Operation and Maintenance Guide* for additional information.

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- Step 1.** If necessary, press **Ctrl+B** to access the MP interface.
- Step 2.** Log in with proper username and password.
- Step 3.** Press **cl** to display the console logs. This log displays console history from oldest to newest.
- Step 4.** Press **sl** to display the system logs. The system logs consist of:
  - System event
  - Forward progress
  - Current boot
  - Previous boot
  - Live events
  - Clear SEL/FPL logs
- Step 5.** Select the desired log for viewing. (For a complete explanation of the management processor and all commands see the *hp Integrity cx2600 Operation and Maintenance Guide*.)

### Disk and I/O Path Logging

Some failures result in I/O path logging. These paths help to indicate the source of the error and may be included in the error message or logged into console or event logs. The following table describes the disk drive and PCI slot paths for your HP Server.

**Table 4-6 Disk and DVD Paths**

Slot	Path
Slot 0	Acpi(HWP0002,100)/Pci(1 0)/Scsi(Pun0,Lun0)
Slot 1	Acpi(HWP0002,100)/Pci(1 0)/Scsi(Pun1,Lun0)
Slot 2	Acpi(HWP0002,100)/Pci(1 1)/Scsi(Pun2,Lun0)
DVD	Acpi(HWP0002,0)/Pci(2 0)/Ata(Primary,Master)

**Table 4-7 I/O Paths**

I/O Slot	Path
PCI Slot 1	Acpi(HWP0002,400)/Pci(1 0)
PCI Slot 2	Acpi(HWP0002,300)/Pci(1 0)
PCI Slot 3	Acpi(HWP0002,200)/Pci(1 0)
PCI Slot 4	Acpi(HWP0002,600)/Pci(1 0)

---

## Troubleshooting Using Offline Support Tools

You can use offline support tools to troubleshoot your hp Integrity cx2600 Server.

- Offline Diagnostic Environment (ODE)—available on IPF Offline Diagnostics on the resource CD that comes with your HP Server.
- E-DiagTools—available from IPF Offline Diagnostics on the resource CD that comes with your server.
- Management Processor (MP) event logs—available by logging on to the management processor via the MP LAN or MP remote serial connectors.

### Offline Diagnostic Environment (ODE)

ODE is used to evaluate specific hardware components via a command line interface. To access ODE from the IPF Offline Diagnostics CD, perform the following steps:

- Step 1.** Power on your HP Server and insert the IPF Offline Diagnostics CD into the DVD-ROM tray.
- Step 2.** Do not permit the server to boot into an operating system and at the EFI Boot Manager, select EFI shell.
- Step 3.** Determine the file system that represents the CD and enter the appropriate command to access the CD.

## E-Diag Tools

E-DiagTools is used to evaluate the hardware integrity of your HP Server. To access E-DiagTools from the IPF Offline Diagnostic CD, perform the following steps:

- Step 1.** Power on your HP Server and insert the IPF Offline Diagnostics CD into the DVD-ROM tray.
- Step 2.** Do not permit the server to boot into an operating system and at the EFI Boot Manager, select EFI shell.
- Step 3.** Determine the file system that represents the CD and enter the appropriate command to access the CD.
- Step 4.** After accessing the CD diagnostic menu, launch e-Diagtools for IPF and run the Basic and Advanced tests according to the menus.

**Figure 4-3 Offline Diagnostic Main Menu**

```

*****
*****
*****      Offline Diagnostic Environment      *****
*****
*****      (C) Copyright Hewlett-Packard Co 1993-2003      *****
*****              All Rights Reserved              *****
*****
*****      HP shall not be liable for any damages resulting from the *****
*****      use of this program.                      *****
*****
*****              TC Version B.00.10                *****
*****              SysLib Version B.00.06            *****
*****              Mapfile Version B.01.05          *****
*****
*****
Type HELP for command information.
ODE> ls
Modules on this boot media are:
filename      type      size      created   description
-----
CIODIAG2.EFI  TM        642560    06/06/2003  Core IO diagnostic
CPUDIAG.EFI   TM        737280    06/06/2003  Processor diagnostic
IODIAG.EFI    TM        143872    06/06/2003  Runs selftests on I/O modules
MAPPER.EFI    TM        1653248   06/06/2003  System mapping utility
MEMDIAG.EFI   TM        263168    06/06/2003  Memory diagnostic
PERFVER.EFI   TM        814592    06/06/2003  Runs ROM-based selftests on peripherals
PLUTODIAG.EFI  TM        514560    06/06/2003  SBA/LBA diagnostic
COPYUTIL.EFI  TM        1041920   06/06/2003  Disk-to-tape copy utility
DFDUTIL.EFI   TM        850432    06/06/2003  Disk firmware download utility
FCFUPDATE.EFI  TM        608256    06/06/2003  FW Update Utility for Fibre Channel
ODE>
    
```

## Other Event Logs and General Diagnostic Tools

This section describes other general diagnostic tools that will be provided for your HP Server and how to generate other event logs for troubleshooting diagnosis.

- A general diagnostic tool that is available to support your HP Server is the MCA analyzer
- Event logs not generated by the management processor include:
  - Machine check abort log (MCA)
  - Corrected machine check log (CMC)
  - Corrected platform error log (CPE)



To access these logs type in at the `shell>`command line prompt:

```
errdump mca
errdump cmc
errdump cpe
```

## Hypothetical Troubleshooting Scenario

The following describes a hypothetical troubleshooting scenario that might occur with your hp Integrity cx2600 Server.

1. This is the entry point to the troubleshooting process. Here, you pick from a set of symptoms, ranging from very simple (system LED is blinking) to the most difficult (MCA has occurred). The following is a list of symptom examples:
  - System LED blinking
  - System will not power up
  - System will not boot
  - Machine check abort (MCA) occurred
2. This step narrows down the observed problem to the specific troubleshooting procedure required. Here, you isolate the failure to a specific part of the machine so that you can perform more detailed troubleshooting. For example:
  - Problem—System LED blinking yellow or red
    - If the LED corresponds to a system alert message on the control console, analyze recent errors logged by the management processor.
    - If the diagnostic LEDs identify a probable cause, analyze the logged error messages for additional information.
3. At this point you will probably know which component of your HP Server needs attention. For example, if the symptom was “System won’t power up” the initial troubleshooting procedure may have led to a problem with the power supplies.
4. You have now reached the point where the failed Field Replaceable Unit (FRU or FRUs) have been identified and need to be replaced. You must now perform the specific remove and replace and verification steps. See the *hp Integrity cx2600, Operation and Maintenance Guide* on the documentation CD included with your system for remove and replace procedures on all FRUs in your HP Server.

---

**NOTE** If multiple FRUs are identified as part of the solution, a fix may not be complete unless all identified failed FRUs are replaced.

---

5. There may be specific recovery procedures you need to perform to finish the repair. For example, if the management processor is replaced, you will need to restore customer-specific information such as user profiles, network IDs, and passwords. See the *hp Integrity cx2600, Operation and Maintenance Guide* on the documentation CD included with your system for procedures on setting up your management processor.



---

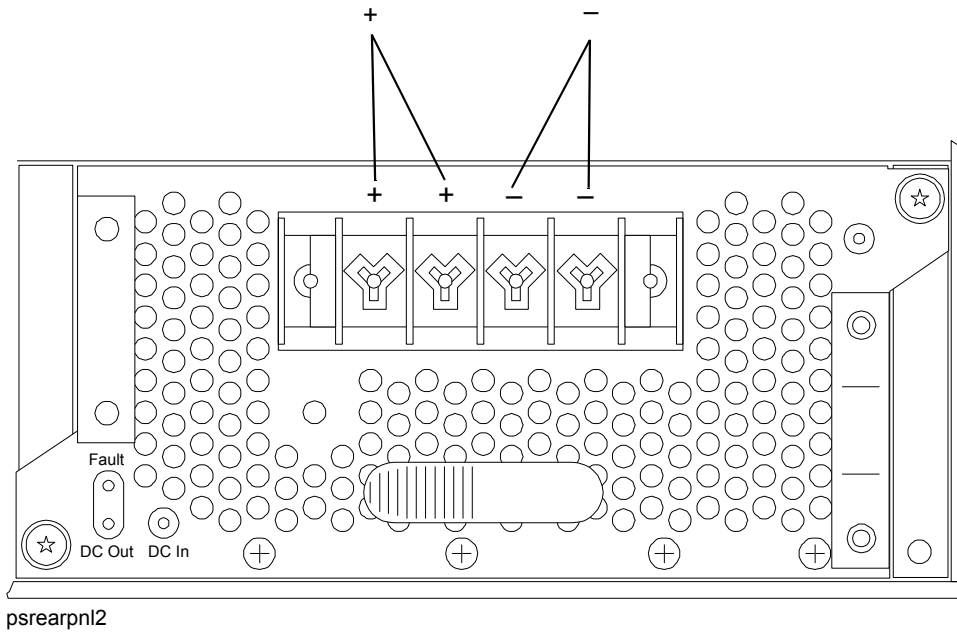
# 5 Cable Connections

---

## Input Power

The hp Integrity cx2600 server comes with two power supplies installed: each powered from its own power cable. The input for each connector is rated for  $-48\text{ VDC}$  ( $-40$  to  $-72\text{ VDC}$ ) at up to 15 amps (max.). (See Figure 5-2 for power supply terminals/connections.) The server will function normally with only one power supply installed, but N+1 redundancy requires that both power supplies be used during normal operations. Under normal operating conditions, the two power supplies share the load.

**Figure 5-1** hp Integrity cx2600 Power Supply (rear view)



---

**WARNING** Voltages and hazardous energy can be present at various locations within the server whenever a power source is connected. This hazard is present even when the power switch is in the off position. Failure to observe this warning could result in personal injury or damage to equipment.

---

---

## Wire Selection and Terminal Lugs for Connection of DC Power

---

**WARNING** Always check that the power cable is not connected to a power source before attempting to connect the power cable to server power supply terminals. Failure to observe this warning could result in personal injury or damage to equipment.

---

**WARNING** Failure to use the appropriate wire and terminal lugs when connecting DC power to the server could result in personal injury or damage to equipment.

---

A DC power terminal block is provided at the rear of each DC power supply. All four terminals (2+ and 2-) should be used. HP recommends a minimum #12 AWG or larger copper conductor be used for connecting DC power. The wire style and insulation type must be appropriately rated for the application.

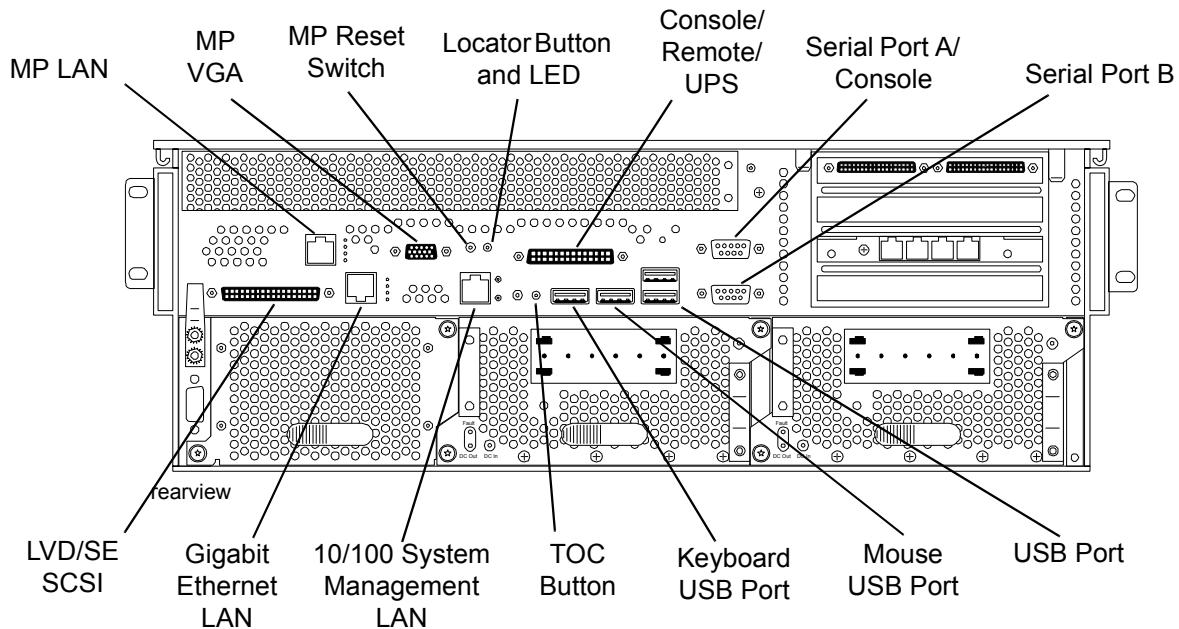
Aluminum conductors should be avoided. Aluminum has a coefficient of expansion that differs significantly from that of other metals commonly used in power hardware. Because of this difference, use of aluminum conductors can cause connector hardware to loosen, overheat, and fail.

The terminal lugs used to connect DC power must be rated to handle the expected load of 15A/PSU. The width of the lug can be no larger than 0.3 inches (0.762 cm).

## Core I/O Connections

The locations of interface connectors on the hp Integrity cx2600 Server rear panel are shown in Figure 5-2. Each hp Integrity cx2600 server core I/O includes:

**Figure 5-2 hp Integrity cx2600 Server (rear view)**



- One USB Keyboard connector
- One USB Mouse connector
- Two USB ports
- Two serial ports (A and B)
- One tri-port serial connector (Console, Remote, and UPS) for connection breakout cable
- VGA controller connector
- One System Management (10/100) LAN -RJ45
- One 10/100 LAN-RJ45
- One 1 Gb LAN-RJ45
- One Management Processor (MP) LAN -RJ45
- SCSI LVD/SE connector.
- Four PCI Connections (0 to 4 PCI cards may be used)

## Management Processor (MP)

The management processor is an independent support system for the server. It provides a way for you to connect to a server and perform administration or monitoring tasks for the server hardware.

The management processor controls power, reset, transfer of control (TOC) capabilities, provides console access, displays and records system events, and can display detailed information about the various internal subsystems. The management processor also provides a virtual front panel which can be used to monitor the front panel LEDs from a remote location.

The management processor is available whenever the system is connected to a power source, even if the hp Integrity cx2600 server main power switch is in the off position.

Access to the management processor can be restricted by user accounts. User accounts can be password protected and provide a specific level of access to the server and management processor commands.

Multiple users can interact with the management processor. Users can select any of the following options from the MP Main Menu: enter management processor command mode, enter console, view event logs, view console history, display virtual front panel, enter console session, or connect to another management processor. Multiple users can select different options from the MP Main Menu at the same time. However, management processor command mode and console mode are mirrored. The MP allows only one user at a time to have write access to the shared console.

### Accessing the Management Processor

You can connect a console to the management processor using either of the following methods:

- Local access-connect a terminal to the rear panel console/remote/UPS port using a breakout cable.
- Network access-connect via web console or telnet to the management processor LAN port, if login access through the management processor LAN is enabled.

### Local Terminal Access to the Management Processor

Communication with the management processor can be established by connecting a terminal to the local MP I/O serial port (Console/Remote/UPS connector) on the server rear panel. Install the M (breakout) cable and connect the terminal to the console connector of the M cable.

A terminal session may be established using a standalone terminal, or using terminal emulation software such as Reflection 1 running on a PC. Install the breakout (M) cable (connect to the Console/Remote/UPS connector) and connect the terminal to the Console connector.

During installation, communicating with the management processor enables such tasks as:

- Verifying that the components are present and installed correctly
- Setting the LAN IP addresses

### Setting Terminal Parameters

After powering on the terminal, ensure the communications settings are as follows:

- 8/none (parity)
- 9600 baud
- None (receive)
- None (transmit)

If the terminal is a PC using Reflection 1, check or change these communications settings by performing the following steps:

**Step 1.** From the Reflection 1 Main screen, pull down the **Connection** menu and select **Connection Setup**.

**Step 2.** Select **Serial Port**.

**Step 3.** Select **Com1**.

**Step 4.** Check the settings and change, if required.

Go to **More Settings** to set Xon/Xoff. Click **OK** to close the More Settings window.

**Step 5.** Click **OK** to close the Connection Setup window.

**Step 6.** Pull down the **Setup** menu and select **Terminal** (under the **Emulation** tab).

**Step 7.** Select a supported terminal type.

The preferred type is **VT100**.

**Step 8.** Click **Apply**.

This option is not highlighted if the terminal type you want is already selected.

**Step 9.** Click **OK**.

### Network Access to the Management Processor

By connecting the management processor LAN port to an active network, another host on the same subnet can set the management processor IP address via the ping command. After the IP address has been set, a telnet session can be established to configure additional parameters.

To configure the management processor LAN IP address, perform the following steps:

**Step 1.** Determine the Medium Access Control (MAC) address of the management processor LAN interface by viewing the label located at the rear of the server.

**Step 2.** Connect a LAN cable on your local subnet to the MP LAN port.

**Step 3.** Add an Address Resolution Protocol (ARP) table entry to another host located on your local subnet. This ARP table entry will map the MAC address of the core I/O LAN interface to the IP address chosen for that interface.

---

**NOTE** Adding an entry to the ARP table is typically done using the ARP command with the appropriate option. For example, arp -s is used with Windows. Consult your operating system documentation for more information.

---

**Step 4.** Use the ping command from the host that has the new ARP table entry. The destination address is the IP address that is mapped to the MAC address of the management processor. The management processor LAN port should now be configured with the appropriate IP address.

**Step 5.** Use the telnet command to connect to the management processor from a host on the local subnet.

### Interacting with the Management Processor

To interact with the management processor, perform the following steps:

---

**NOTE** On initial system installation, the MP has two default user accounts. They are:

1. Administrator level user; login=Admin, password=Admin (both are case sensitive).
2. Operator level user; login=Oper, password=Oper (both are case sensitive).

For security reasons, it is recommended that the UC command be used during the initial logon session (enter CM at the MP prompt, and enter UC at the MP:CM> prompt) to modify default passwords or to delete and create user accounts.

---

**Step 1.** Log in using your management processor user account name and password.

---

**NOTE** The management processor will start with the MP Main Menu displayed. To follow these steps, make sure you are at the Main Menu. If you are not at the Main Menu, use **Ctrl+B** to return to the Main Menu.

---

**Step 2.** Use the management processor menus and commands as needed. Main Menu commands are shown in Table 5-1, “Management Processor Commands and Descriptions.” Commands not displayed in the MP Main Menu can be accessed in command mode by first using the **CM** command at the MP prompt. A list of available commands is presented in and can be displayed by using the management processor help function (enter **HE** followed by **LI** at the MP>prompt). You can return to the MP Main Menu by typing **Ctrl+B**.

**Step 3.** Log out using the X command (enter **X** at the MP> prompt) after returning to the MP Main Menu.

### The MP Main Menu

Main menu commands:

```
MP MAIN MENU:
CO: Console
VFP: Virtual Front Panel
CM: Command Menu
CL: Console Logs
SL: Show Event Logs
HE: Main Menu Help
X: Exit Connection
```

### Configuring Management Processor LAN Information

LAN information includes the management processor network name, the management processor IP address, the management processor subnet mask, the management processor gateway address, and the web console port number.

To set the management processor LAN IP address:

**Step 1.** At the MP Main Menu prompt (MP>), enter **CM** to select command mode.

**Step 2.** At the command mode prompt (MP:CM>), enter **LC** (for LAN configuration).

The screen displays the default values and asks if you want to modify them. It is good practice to write down the information, as it may be required for future troubleshooting. See “The LC Command Screen”.



---

**NOTE** The value in the “IP address” field is set at the factory. The customer must provide the actual management processor LAN IP address.

---

- Step 3.** The current `lc` data is displayed. When prompted to enter a parameter name, `A` to modify All, or `Q` to Quit, enter `A` to select all parameters.
- Step 4.** The current IP address is displayed. When prompted to enter a new value or `Q`, enter the new IP address.
- Step 5.** The current host name is displayed. When prompted to enter a new value or `Q`, enter the new management processor network name.
- This is the host name for the management processor LAN. The name can be up to 64 characters in length, and can include dashes, underlines, periods and spaces.
- Step 6.** The current subnet mask name is displayed. When prompted to enter a new value or `Q`, enter the new subnet mask name.
- Step 7.** The current gateway address is displayed. When prompted to enter a new value or `Q`, enter new the gateway address.
- Step 8.** The current web console port number is displayed. When prompted to enter a new value or `Q`, just hit `enter`. The message `-> Current Web Console Port Number has been retained will be displayed.`
- Step 9.** The current link state information is displayed. When prompted to enter a new value or `Q`, just press `enter`. The message `-> Current Link State has been retained will be displayed.`
- Step 10.** A new `lc` listing is displayed, including the values entered in the preceding steps. Verify that the desired values have been accepted. When prompted to enter a parameter for revision, `Y` to confirm, or `Q` to Quit, enter `Y` to confirm all parameters.
- Step 11.** Observe the following display:
- ```
> LAN Configuration has been updated
-> Reset MP (XD command option 'R') for configuration to take effect.
MP Host Name: name (the name entered in step 5)
MP:CM>
```
- Step 12.** Enter `XD -reset` to reset the MP.
- Step 13.** After the MP resets, log into the MP again. Then enter the MP command mode (enter `CM` at the `MP:` prompt).
- Step 14.** At the `MP:CM>` prompt, enter `LS` to confirm the new LAN settings.
- Step 15.** Enter `SA` to enable/disable web console and telnet access after the MP has been reset.

## The LC Command Screen

### LC commands:

```
MP:CM> lc -ip 127.0.0.1 -host uninitialized -subnet 255.255.255.0 -gate 127.0.0.1 -web 2003
New LAN Configuration (* modified value):
* IP Address: 127.0.0.1
* MP Host Name: uninitialized
* Subnet Mask: 255.255.255.0
* Gateway Address: 127.0.0.1
  Link State: Auto Negotiate
* Web Console Port Number: 2023
Confirm? (Y/ {N}) : y
-> LAN configuration has been updated
-> Reset the MP (XD command option 'R' ) for confirmation to take effect.
MP Host Name : uninitialized
MP:CM> xd -reset
```

## Management Processor Commands

**Table 5-1 Management Processor Commands and Descriptions**

| <b>Command</b> | <b>Description</b>                                       |
|----------------|----------------------------------------------------------|
| BP             | Reset BMC passwords                                      |
| CA             | Configure serial port parameters                         |
| CE             | Log a repair in the history buffer                       |
| CL             | Display console history                                  |
| CG             | Certificate generator                                    |
| CM             | Enter command mode                                       |
| CO             | Return to redirected console mode                        |
| CSP            | Connect to another service processor                     |
| DATE           | Display date                                             |
| DC             | Default configuration                                    |
| DF             | Display FRUID                                            |
| DI             | Disconnect remote or LAN console                         |
| FW             | MP firmware upgrade                                      |
| HE             | Display help for menu or command                         |
| ID             | System information                                       |
| IT             | Modify MP inactivity timers                              |
| LC             | LAN configuration                                        |
| LS             | LAN status                                               |
| MA             | Return to MP Main Menu                                   |
| MR             | Modem reset                                              |
| MS             | Modem status                                             |
| PC             | Remote power control                                     |
| PG             | Configure paging                                         |
| PR             | Power restore policy configuration                       |
| PS             | Power management module status                           |
| RB             | Reset BMC through toggle GPIO pin                        |
| RS             | Request BMC to reset system through RST signal           |
| SA             | Configure remote/modem-LAN telnet and web access options |
| SE             | Activate a system session on locator remote port         |

**Table 5-1 Management Processor Commands and Descriptions (Continued)**

| <b>Command</b> | <b>Description</b>                                   |
|----------------|------------------------------------------------------|
| SL             | Show logs                                            |
| SO             | Security options and access control                  |
| SYSREV         | Display all firmware revisions                       |
| SS             | System status of processor modules                   |
| TC             | Transfer of control-system reset through INIT signal |
| TE             | Tell-send a message to other users                   |
| UC             | User configuration                                   |
| VFP            | Virtual front panel                                  |
| WHO            | Display connected management processor users         |
| X              | Exit from MP Main Menu                               |
| XD             | MP diagnostics and/or reset                          |

---

## Booting the Server

To boot the server, press the power switch located on the front panel.

If the autoboot function is enabled, the system will boot to the installed operating system. If autoboot is not enabled, the system will enter the EFI boot manager. The EFI boot manager allows you to control the server's booting environment. For more information about the EFI boot manager, review the Utilities chapter of the *Operations and Maintenance Guide*.

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